

# Corn Kernel Texture Analysis

Hardness and fracturability testing of corn kernels is essential to evaluate texture, impacting both food quality and consumer preference. This test measures the force needed to shear through a corn kernel, providing insights into its firmness and brittleness, which are crucial for product consistency.

## Background:

- Corn kernels, found inside fibrous husks, are widely used in various forms, from fresh to processed products. This test assesses the firmness (peak load) and fracturability of kernels, measuring the maximum force to shear through each kernel, simulating biting or cutting.



## Equipment and Settings:

- CTX Texture Analyzer with 5 kg load cell
- Equipment: Craft Knife Adapter, Fixture Base Table, Texture Pro Software
- Test Parameters:
  - Test Type: Compression
  - Target Type: Distance
  - Target Value: 5 mm
  - Trigger Load: 10 g
  - Pre-Test Speed: 1 mm/s
  - Test Speed: 1 mm/s

## Sample Preparation:

1. Store corn kernels at room temperature in original packaging overnight.
2. Remove kernels from the cob just before testing.

## Procedure:

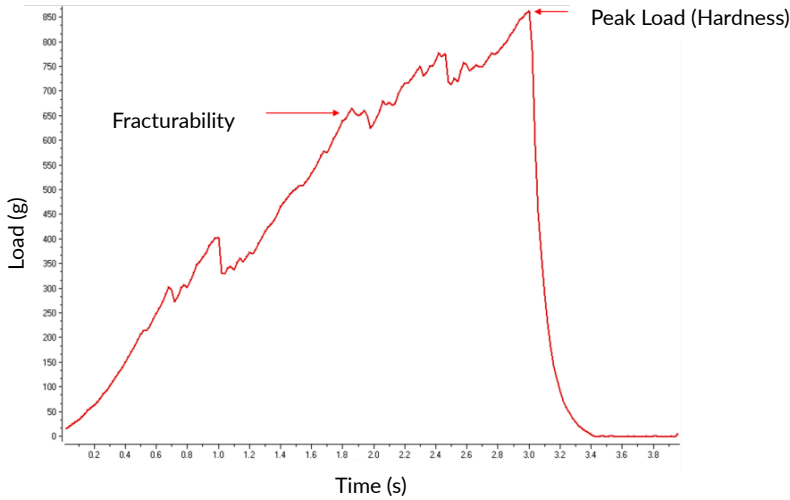
1. Attach the shear blade to the analyzer and secure the fixture base table.
2. Center each kernel on the table, aligning it under the probe.
3. Set test parameters, positioning the probe 3 mm above the sample.
4. Begin the test, repeating for each kernel sample.



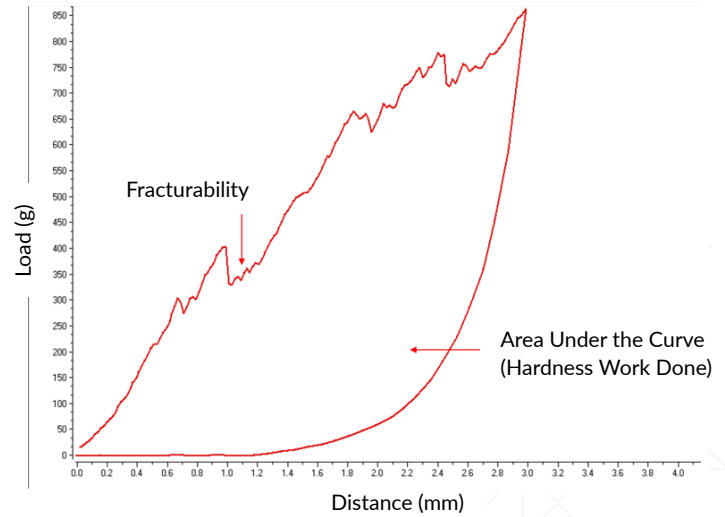
**Observations:**

- Load vs. Time Graph: Indicates sample hardness, with peak load representing the maximum force required.
- Load vs. Distance Graph: Shows work done to shear the kernel over 5 mm, representing the energy required for breakdown.

Hardness and Fracturability of Corn Kernels



Hardness Work Done and Fracturability of Corn Kernels



**Results:**

- Hardness (Peak Load): 862 g
- Hardness Work Done: 14 mJ
- Fracturability: 303 g

#	Sample Description Product Name	Batch Name	Results Hardness Cycle 1 (g)	Hardness Work Cycle 1 (mJ)	Fracturability (g)
1	Corn	Raw	862.00	14.00	303.00

**Discussion:**

Peak load measures the firmness of the kernel, while the hardness work done indicates the energy needed for shearing. Fracturability reflects the kernel's brittleness, useful for assessing crispness. These measurements are vital for quality control, providing consistent textural attributes for processed corn products.