

# Kix Cereal Texture Analysis

Understanding the hardness and crispiness of Kix breakfast cereal is critical for maintaining product quality and consumer satisfaction. Crispiness influences the eating experience, while hardness affects the cereal's texture and shelf-life. This analysis helps manufacturers optimize the texture of the cereal.

## Test Objective:

- To determine the hardness and crispiness of Kix breakfast cereal using a CTX Texture Analyzer and the 490 cc Ottawa Cell (TA-OC2).

## Equipment:

- Instrument: CTX Texture Analyzer with a 50 kg Load Cell (Figure 1)
- Fixture: 490 cc Ottawa Cell (TA-OC2) (Figure 2)
- Software: Texture Pro

## Settings:

- Test Type: Compression
- Target Distance: 15 mm
- Trigger Load: 50 g
- Test Speed: 1 mm/s

## Procedure:

- Measure and prepare 40 g of Kix cereal per test (Figure 3).
- Attach the TA-OC2 probe to the CTX Texture Analyzer.
- Insert the Fixture Base Table on the CTX and secure the TA-OC2 cell on the base.
- Adjust the table so the probe is centered over the sample.
- Place the Kix sample inside the cell and position the probe 3 mm above the sample (Figure 4).
- Begin the test, compressing the sample over 15 mm at a speed of 1 mm/s.

## Observations:

- Once a trigger load of 50 g is detected, the probe compresses the cereal at 1 mm/s. The Load vs. Time graph (Figure 5) shows the sample hardness and fracturability. Jagged lines indicate fractures, which correlate to the crispiness of the cereal.

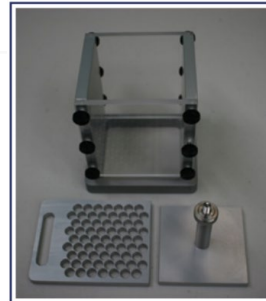


Figure 2  
490 cc Ottawa Cell (TA-OC2)



Figure 1  
AMETEK Brookfield CTX Texture Analyzer  
fitted with 490 cc Ottawa Cell



Figure 3  
Sample before testing



Figure 4  
Sample during testing

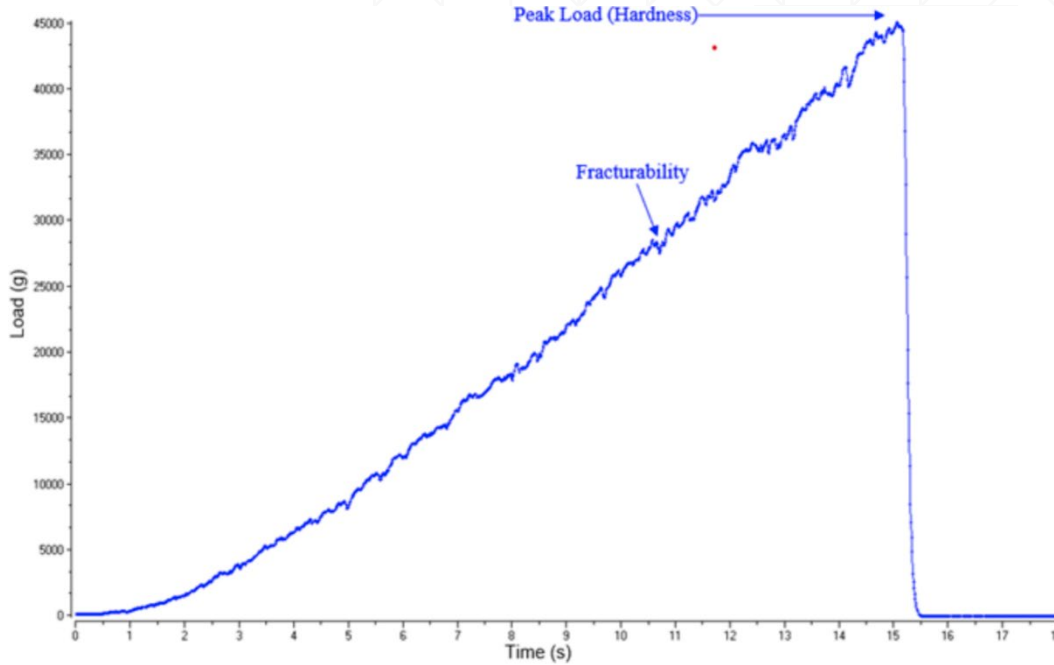


Figure 5

**Results:**

- Figure 6: Data from the tests highlight the average peak load (firmness) and the quantity of fractures (crispiness).
- Peak Load (Hardness): Indicates the force required to compress the sample.
- Fracturability: The number of fractures correlates with the cereal's crunchiness.

#	Sample Description	Batch Name	Results				
			Sample	Hardness Cycle 1	Hardness Work Cycle 1	Quantity of Fractures	Fracturability
				g	mJ		g
1	Cereal	Kix (whole grain)	1	42670.00	2136.40	11.00	5435.00
2	Cereal	Kix (whole grain)	2	45050.00	2705.20	18.00	10780.00
3	Cereal	Kix (whole grain)	4	44575.00	2550.40	12.00	11800.00
Calculation Settings		Minimum		42670	2136	11.00	5435
Fracture Sensitivity: 1 % of load		Maximum		45050	2705	18.00	11800
		Average		44098	2464	14.00	9338
		Standard Deviation		1260	294.1	4	3419

Figure 6

**Sample Data:**

- Sample 1: Hardness = 2136.4 g, Fracturability = 11 fractures
- Sample 2: Hardness = 2705.2 g, Fracturability = 18 fractures
- Sample 3: Hardness = 2550.4 g, Fracturability = 12 fractures

**Conclusion:**

The test results are valuable for determining the optimal hardness and crispiness of Kix cereal, which is crucial for consumer satisfaction. Proper adherence to sample preparation and test procedures ensures reliable and reproducible results.