

Cracker Texture Analysis

This analysis will determine hardness and crispiness of crackers using the CTX Texture Analyzer and Three-Point Bend (TA-TPB) Fixture.

Background:

- Crackers are tested for texture properties (hardness and crispiness) using a compression test.
- Samples were stored at room temperature in original packaging until testing.



Equipment:

- CTX Texture Analyzer with 5,000 g load cell (Fig. 1)
- Fixture Base Table (TA-BT-KIT)
- Three-Point Bend (TA-TPB) Fixture (Fig. 2)
- Texture Pro Software

Test Settings:

- Type: Compression
- Target Distance: 5 mm
- Trigger Load: 10 g
- Speeds: Pre-test at 1 mm/s; test at 0.8 mm/s

Sample Preparation:

- Store samples overnight at room temperature in original packaging.
- Remove samples just before testing; ensure they are not deformed.



Figure 1
CTX Texture Analyzer with Fixture Base
Table (TA-BT-KIT) and
Three-Point Bend (TA-TPB)



Figure 2
TA-TPB Fixture used for testing

Procedure:

1. Attach TA-TPB blade to CTX Analyzer (Fig. 2).
2. Secure Fixture Base Table with bolts.
3. Attach TA-TPB bottom blades to the Fixture Base Table.
4. Align probe and sample (Figs. 3 and 4).
5. Lower the blade for proper alignment.
6. Set test parameters in Texture Pro software.
7. Run the test; repeat for all samples.

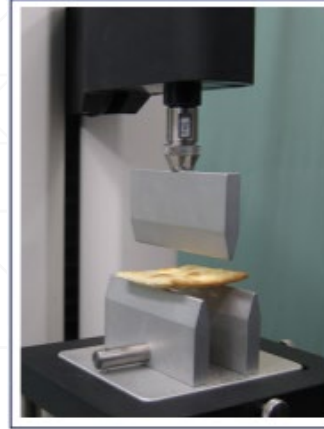


Figure 3
Sample before testing



Figure 4
Sample during testing

Observations:

- When a trigger load of 10 g is detected, the probe compresses the cracker at 0.8 mm/s over a 5 mm distance.
- Cracker breaks when applied force exceeds its resistance.
- Load vs. Time Graph (Fig. 5): Shows hardness.
- Multiple tests averaged for results (Fig. 6).

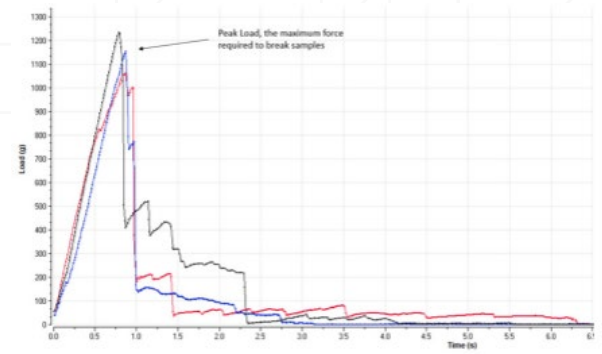


Figure 5
Graph plot showing the forces required to break three pieces of cracker samples.

Data Analysis:

- Peak load value measures sample firmness: higher values indicate firmer samples.
- Hardness work measures energy needed to chew the cracker.
- Quantity of fractures indicates cracker crunchiness.

#	Sample Description		Results		
	Product Name	Batch Name	Sample	Hardness Cycle 1	Hardness Work Cycle 1
				g	mJ
1	Crackers	Artisan	2	1234.00	7.00
2	Crackers	Artisan	7	1153.20	7.00
3	Crackers	Artisan	8	1063.00	11.00
	Calculation Settings		Minimum	1063	7.00
	Fracture Sensitivity: 1 % of load		Maximum	1234	11.00
			Average	1150	8.00
			Standard Deviation	85.50	2.00

Figure 6
Statistical results of the tests performed on cracker samples.

Conclusion:

- Test results determine ideal cracker hardness and crispiness.
- Adherence to procedure and setup ensures reproducibility.