

# Jam Texture Analysis

Understanding the firmness, consistency, and gel structure of raspberry fruit preserves is essential for maintaining product quality. Firmness affects the consumer experience when spreading the preserve, while consistency impacts the flow of the product during processing.

## Test Objective:

- To determine the firmness of raspberry fruit preserve using the CTX Texture Analyzer with a Dual Extrusion Cell Fixture (TA-DEC). The test evaluates key parameters such as firmness, consistency, and gel structure.

## Equipment:

- Instrument: CTX Texture Analyzer with 10 kg Load Cell (Figure 2)
- Fixture: Dual Extrusion Cell Fixture (TA-DEC)
- Software: Texture Pro

## Settings:

- Test Type: Compression
- Target Distance: 25 mm
- Trigger Load: 20 g
- Pre-Test Speed: 1 mm/s

## Procedure:

1. Attach the TA-DEC probe to the CTX Texture Analyzer.
2. Secure the Fixture Base Table to the analyzer.
3. Insert the sample into the TA-DEC cell, align the probe with the sample, and position it 2 mm above the surface.
4. Begin the test, compressing the sample until the target distance of 25 mm is reached.

## Observations:

- When the probe detects a trigger load of 20 g, it compresses the raspberry preserve at 1 mm/s until reaching 25 mm. The Load vs. Time graph (Figure 3) shows the firmness of the sample, while the Load vs. Distance graph (Figure 4) illustrates the work done to extrude the sample.
- Higher load values indicate a firmer sample.
- The area under the curve reflects the energy required to extrude the preserve, providing insights into its consistency and gel structure.



Figure 1: Jam



Figure 2 -  
CTX with 10 kg Load Cell (XCTX)

## Mean Peak Load of Raspberry Preserves

### Results:

#### Peak Load (Firmness):

- Sample 1: 2670 g
- Sample 2: 986 g
- Sample 3: 754 g

#### Work Done (Hardness Work):

- Sample 1: 110.3 mJ
- Sample 2: 121.1 mJ
- Sample 3: 108.2 mJ

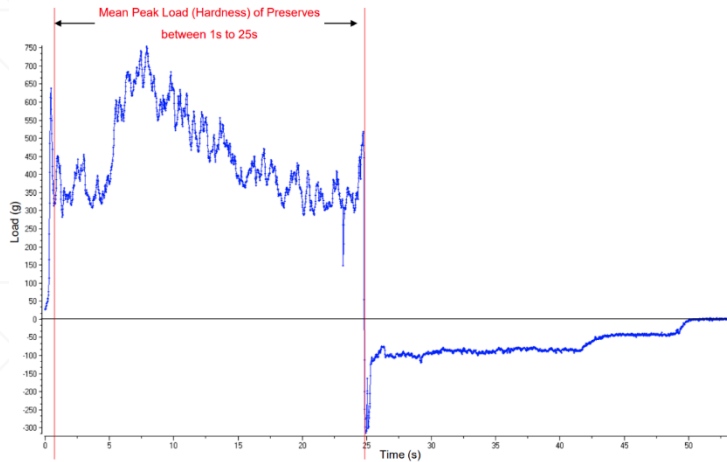


Figure 3

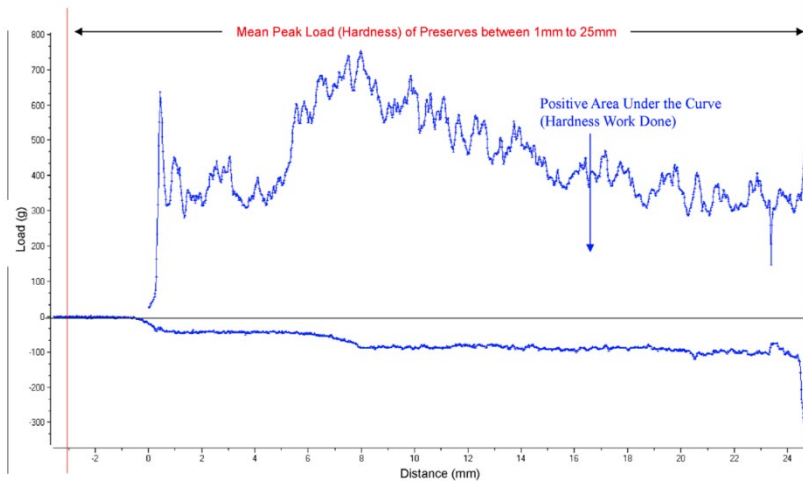


Figure 4

### Conclusion:

#	Sample Description		Result	Hardness Cycle 1	Hardness Work Cycle 1	Mean Load Between 1mm - 25mm
	Product Name	Batch Name	Sample	g	mJ	g
1	Jam Preserve	Red Raspberry	14	2670.00	110.30	426.00
2	Jam Preserve	Red Raspberry	15	986.00	121.10	507.00
3	Jam Preserve	Red Raspberry	13	754.00	108.20	443.00
4	Jam Preserve	Red Raspberry	12	1292.00	4.90	1194.00
Calculation Setting			Minimum	754.00	4.90	426.00
Mean Load: 1s to 25s			Maximum	2670.00	121.10	1194.00
			Average	1462.00	86.10	643.00
			Standard Deviation	858.00	54.40	369.00

This test helps manufacturers determine the ideal firmness and consistency of raspberry fruit preserves, ensuring product quality during processing and consumer use. Proper setup and adherence to the test procedure are essential for reproducible results.