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Sweet Relish Viscosity Analysis

Viscosity testing of sweet relish is essential to ensure consistency in texture, spreadability, and mouthfeel, which directly affect consumer satisfaction. Accurate viscosity measurements help control quality between batches, especially when comparing name brands to store brands, and confirm the product meets consumer expectations for texture and usability.

Background:

- Sweet relish, a condiment commonly spread on or incorporated with foods, has a variable texture due to chopped vegetable pieces.
- Viscosity testing measures the force required to move through the relish, revealing how the product will behave when spread.

Test Equipment:

- Instrument**:** RVDV2T
- Spring Torque Range**:** Various, including RV
- Spindle**:** T-bar spindles, such as T-D and T-F
- Accessory**:** HPQA
- Speed: 6 or 8 rpm

Settings:

- Temperature: Test may be conducted at room temperature or refrigerated temperatures, depending on the target condition.
- Software: RheocalcT

Procedure:

1. Prepare the RVDV2T with the selected T-bar spindle and set the speed.
2. Mount the sample on the HPQA and adjust the setup to ensure the spindle fully immerses in the sample.
3. Initiate the test, allowing the spindle to “drill” down into the relish until reaching the "plateau" region.
4. Once the spindle hits the “plateau,” allow it to reverse direction, observing how torque and viscosity measurements return to "zero" as it exits the sample.
5. Export RheocalcT data or use the software’s Data Averaging feature to calculate average viscosity values for quality control purposes.

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Observations:

- Figure 1**:** Viscosity comparison of name brand (red) vs. store brand (gold) sweet relish at room temperature.
    - The name brand displays a significantly higher viscosity "plateau" (approx. 50–320 seconds) than the store brand (approx. 40–380 seconds).
    - Spikes in the data are noted, caused by the T-bar spindle hitting and releasing from vegetable pieces in the relish.

Results:

- Name brand relish shows a higher average viscosity than the store brand, indicating a thicker consistency.
- Store brand has a longer plateau region due to the spindle's deeper immersion, which may suggest a looser texture with more variable resistance.

Discussion:

This viscosity analysis provides critical data for consistency in product texture, allowing for comparative analysis between brands and facilitating quality control. The HPQA's vertical movement and Rheocalc's data processing options, including averaging, make this testing ideal for a product with heterogeneous components like sweet relish.

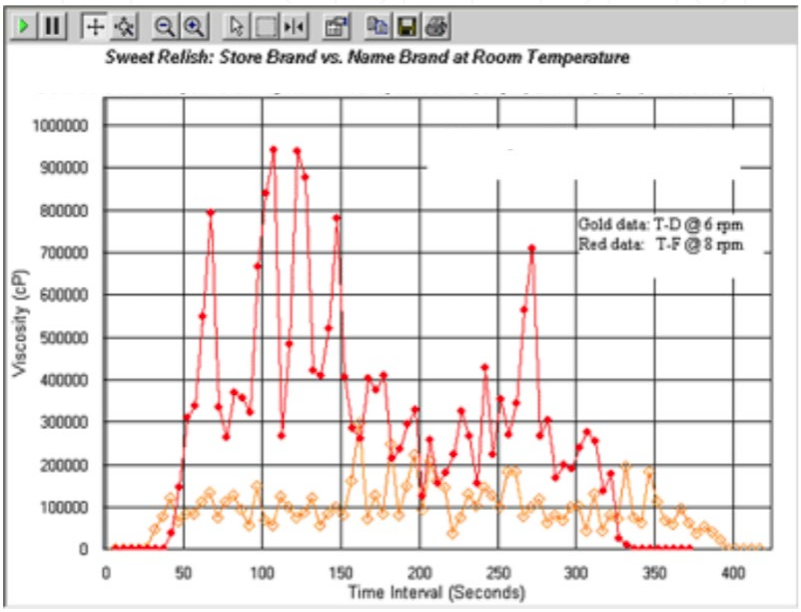

Figure I: *Store brand versus name brand sweet relish at room temperature.*