

Mouthwash Viscosity Analysis

Viscosity testing of mouthwash is essential for quality control to ensure a consistent, smooth texture that meets consumer expectations. By confirming its Newtonian behavior, manufacturers can maintain product stability and predict flow characteristics, important for both user experience and packaging requirements.

Background:

- Mouthwash requires specific viscosity properties to flow easily and feel smooth in the mouth.
- As a Newtonian fluid, mouthwash's viscosity should remain constant across different shear rates, indicating uniform flow behavior.



Test Equipment:

- Rheometer: Brookfield LVDV2T Viscometer
- Spring Torque Range: LV
- Spindle: Enhanced UL Adapter (ULA-EY)
- Accessories: TC-550 SD Bath for temperature control
- Speeds: Tested at 30, 40, 50, 60, 70, 80, 90, 100, 110, and 120 rpm
- Temperature: 22°C

Procedure:

1. Equip the LVDV2T Viscometer with the ULA-EY spindle and sample chamber.
2. Use a syringe to measure and dispense 16 mL of mouthwash into the chamber.
3. Connect the TC-550 bath to regulate temperature at 22°C.
4. Equilibrate the sample, spindle, and chamber for 3 minutes before testing.
5. Run tests at a speed ramp from 30 to 120 rpm, recording viscosity readings at each speed.
6. Clean the spindle and chamber between trials, using fresh mouthwash for each of the three trials to ensure repeatability.

Observations:

- Figure I: Viscosity remains constant across the speed range, confirming Newtonian behavior.
 - Any slight variations in viscosity are within the instrument's 1% tolerance, indicating reliable consistency.

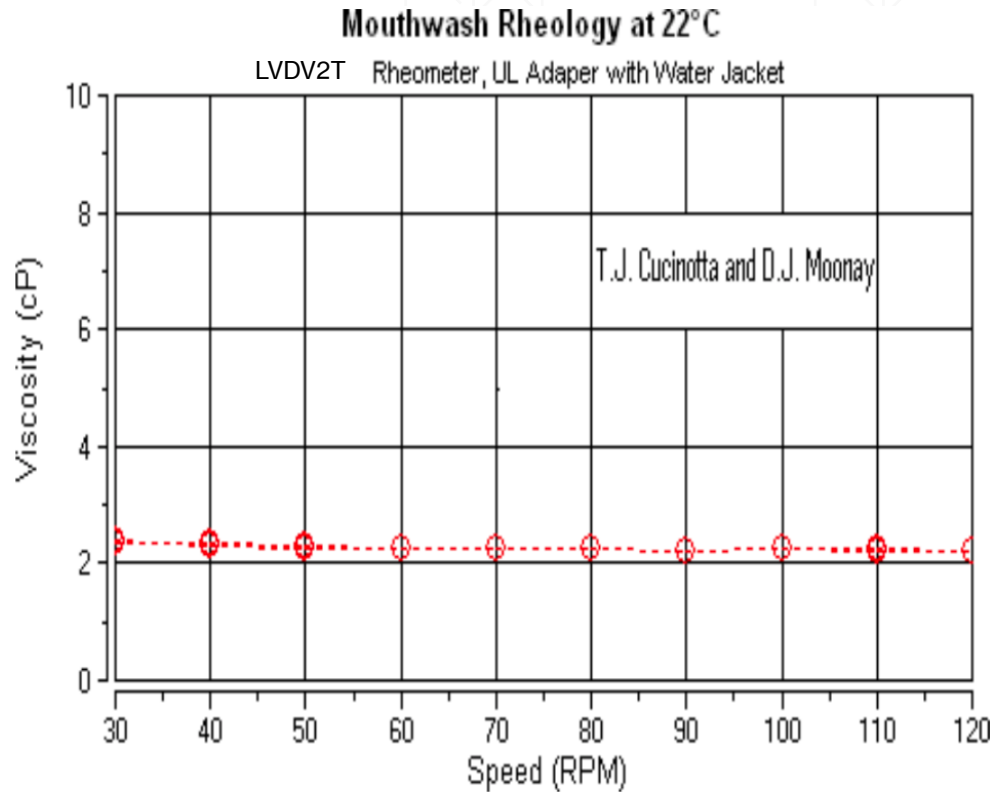


Figure I: Mouthwash at 22°C.

Results:

- The mouthwash exhibits Newtonian characteristics, with stable viscosity unaffected by changes in shear rate.

Discussion:

The consistent viscosity at all tested speeds ensures that the mouthwash provides a predictable and smooth user experience. Testing confirms product quality, supporting stability across packaging, dispensing, and usage, and maintaining a standard viscosity for consumer satisfaction.