

Sunburn Treatment Gel Viscosity Testing

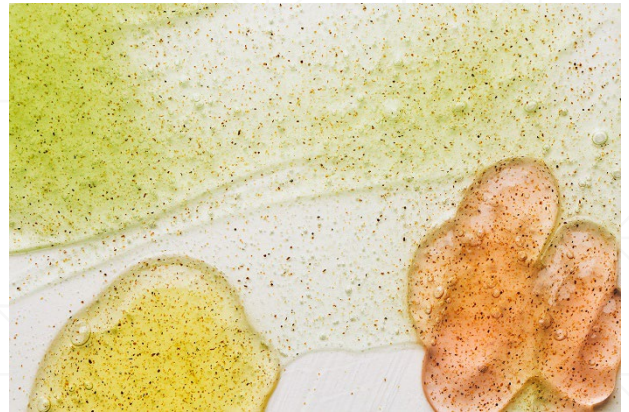
Viscosity testing is essential for sunburn treatment gel to ensure consistent spreadability, application, and stability. This testing ensures the gel meets quality standards for ease of use, maintains proper texture, and effectively delivers a soothing experience for consumers.

Background:

- Sunburn treatment gel requires specific flow and consistency to provide optimal coverage and comfort.
- Testing methods capture the gel's viscosity under different conditions to verify stability and functionality.

Equipment:

- **Method I:**
 - Instrument: Brookfield RVDV2T
 - Spindle: T-A, T-Bar Spindle
 - Accessory: HPQA
 - Speed: 5 rpm
 - Temperature: Room Temperature (70-72°F)
- **Method II:**
 - Instrument: DVNext
 - Spindle: RV-7
 - Speed Range: 50-250 rpm (increments specified)
 - Temperature: Room Temperature (70-72°F)



Procedure:

- **Method I:**
 1. Attach the T-A T-Bar spindle to the RVDV2T Viscometer.
 2. Set up the HPQA to test the gel directly in its original bottle.
 3. Perform tests in three different containers or in three locations within a wide container.
 4. Record viscosity as the spindle moves down and up, observing the plateau near 1,500,000 cP (Figure 1).

- **Method II:**

1. Place the gel in a 250 mL beaker, immersing the RV-7 spindle to its marked depth.
2. Run tests at various speeds from 50 to 250 rpm, measuring viscosity as the spindle moves through the sample (Figure 2).
3. Repeat for different portions of the sample, maintaining consistency across trials.

Observations:

- Figure 1: Viscosity plateaus at approximately 1,500,000 cP, confirming consistency as the spindle exits the gel.
- Figure 2: Viscosity decreases with increasing speeds, demonstrating shear-thinning behavior, with repeatability within $\pm 1\%$.

Sunburn Treatment Gel Rheology at 72°F

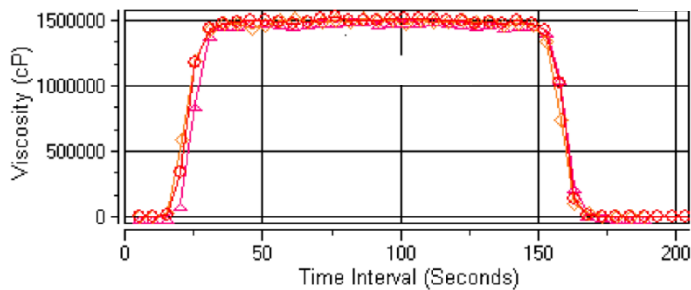


Figure I: Sunburn Treatment Gel at Room Temperature (70-72°F).

Sunburn Treatment Gel Rheology at 72°F

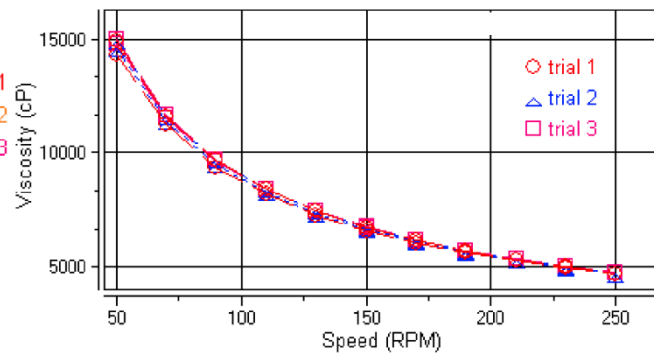


Figure II: Sunburn Treatment Gel, at Room Temperature (70-72°F).

Results:

- Method I confirms a stable viscosity plateau, ensuring the gel's consistency for even application.
- Method II indicates shear-thinning, where viscosity decreases with increased shear rate, allowing smoother application under pressure.

Discussion:

These tests provide essential data on the gel's viscosity, shear-thinning properties, and structural stability. By analyzing these factors, manufacturers can ensure that the sunburn treatment gel delivers a consistent, soothing experience for users, meeting both stability and application requirements.