

# Auto Paint Viscosity Analysis

Understanding the viscosity of auto paint is crucial for achieving a uniform application, optimal coverage, and desired finish on automobile exteriors. Proper viscosity control ensures that the paint flows and adheres correctly during application, providing a smooth and attractive surface that enhances the vehicle's appearance and protects it from environmental elements.

## Test Equipment:

- Viscometers: High Torque CAP 2000+L and Low Torque CAP 2000+L
- Spindle: Cone 10 (CAP-S-10)
- Speed: 100 RPM
- Temperature: 25°C

## Test Method:

- Standard Used: ASTM D7395, "Standard Test Method for Cone/Plate Viscosity at a 500 s<sup>-1</sup> Shear Rate."
- Material equilibrated at 25°C for one minute before testing.
- Solvent trap used to prevent evaporation.



## Procedure:

- A High Torque CAP 2000+L and a Low Torque CAP 2000+L viscometer were used with Capcalc software for automated control and data acquisition.
- Cone 10 was used with 170  $\mu$ L of fluid sample.
- The cone and plate were cleaned before each test; a fresh portion of sample was used for each trial.
- Three trials were conducted for each color of paint (black and white).

## Tolerances for Viscosity:

- High Torque CAP 2000+L:  $\pm 100$  cP
- Low Torque CAP 2000+L:  $\pm 4.4$  cP

**Observations:**

- Figure 1: Data for white paint using High Torque CAP 2000+L viscometer.

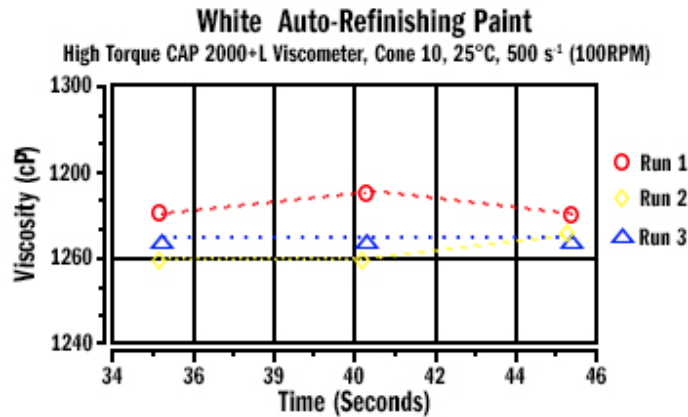


Figure 1

- Figure 2: Data for black paint using Low Torque CAP 2000+L viscometer.

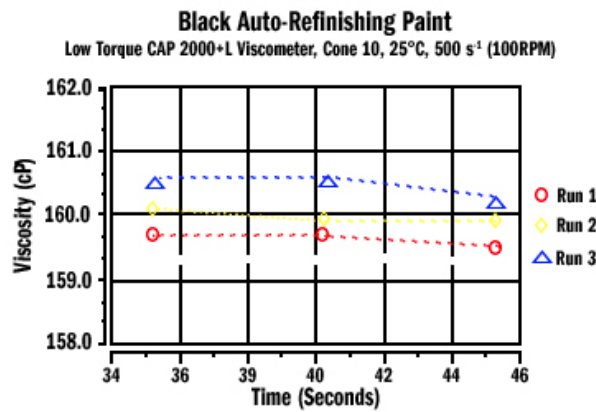


Figure 2

- Figure 3: Comparison of viscosities between black and white auto-refinishing paints; significant differences required the use of different viscometers for each paint type.

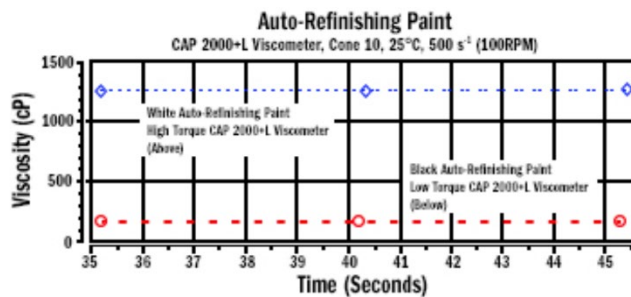


Figure 3: Test Method Comparison:  
 Black and White Auto-Refinishing Paint

**Conclusion:**

The analysis showed that different viscosities between black and white auto-refinishing paints necessitated the use of different viscometers to achieve on-scale results. Proper selection of equipment based on viscosity is essential for accurate measurements and optimal paint application.