

5.3 Tech Data

Effect of Temperature on Clear Gel Coat Application Properties

Background:

Marble clear gel coats are designed for the application; which is to spray onto the mold surface and to hang onto the part without sagging. In order to work well in the application, the viscosity and applications properties of the material need to be considered as well as the environmental conditions.

Materials:

Gel coat type: Clear - Marble

Gel coat product code: SIL08LH-70

MEKP: L-50A

Test: CRSTP – 301 – Viscosity RV4 measurement

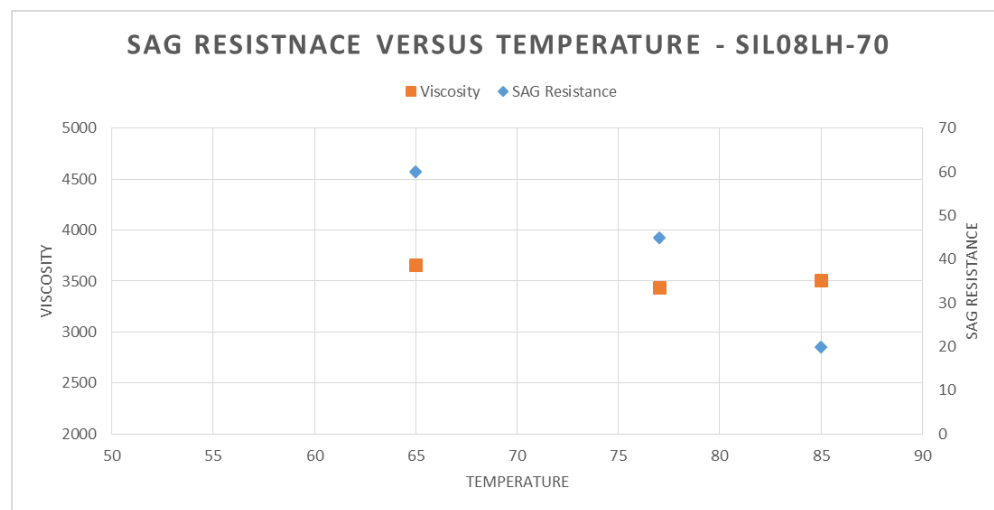
CRSTP – 315 – Sag resistance testing

Experimental:

- 1) Bring the material to the specified temperature
- 2) Run CRSTP 301 - Viscosity
- 3) Run CRSTP 315 – Sag resistance

Results:

Temperature Effect: The application properties of marble gel coats are extremely sensitive to temperature effects. The application properties are dependent on the temperature of the shop and hence the mold temperature. All quality control work is done at 77F, but shop temperatures can and will vary on the season, air flow and other environmental conditions. For example, having a gel coat hose on a cold surface will affect how it sprays and holds onto the mold and hence the ability for it to spray well.



Conclusion

Temperature has a huge effect on a marble clear gel coat application properties. A 10°F temperature change will have little to no effect on the viscosity but will have a dramatic effect on how it adheres to the mold surface. For example, at QC conditions (77°F), a typical marble clear will have a sag resistance around 40 mils. As the environment becomes warmer (85°F), the sag resistance goes down to 20 mils. As the environment becomes cooler (65°F), the sag resistance goes up to 60 mils. The cooler environment improves the sag resistance at the expense of other application properties; trapped air, haze, and increase pressure to spray.