

## 5.2 Tech Data

# Effect of Initiator on Clear Gel Coat Application Properties

**Background:**

Marble clear gel coats are designed to cure very quickly in order to allow customers to achieve their desired cycle times. The gel coat supplier is able to make formulation modifications that have profound effects of film cure time, but once the gel coat formula is established gel coat users often attempt to modify the cure properties to compensate for day-to-day and hour-to-hour temperature and humidity changes in the production environment. The two primary strategies employed by gel coat users to control the cure time of gel coats are 1) mold temperature control, 2) MEKP concentration and 3) use of post cure ovens, ventilation and air movement.

**Materials:**

**Gel coat type:** Clear - Marble  
**Gel coat product code:** SIL08LH-70  
**MEKP:** L-50A  
**Test:** 100 gram cup gel time

**Experimental:**

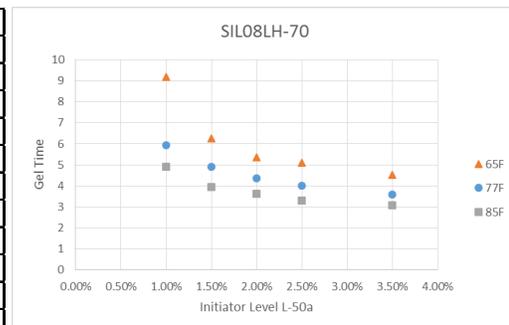
- 1) Bring the material to the specified temperature
- 2) Initiate the gel coat using the specified concentration of MEKP
- 3) Run CRSTP 340 as 100 gram cup gel time

**Results:**

MEKP Concentration: Cup gel time of this marble clear gel coat was reduced by 30 seconds to 1 minute when the MEKP level was increased from 1.50% to 2.00%. Another reduction of cup gel time of 30 seconds to 1 minute was observed when the MEKP level was increased again from 2.00% to 2.50%. Testing was also performed at 1.00% and 3.50%, which is outside manufacturing guidelines and not recommended. For low temperature and low initiator levels, the cup gel time will lag long. For excess amounts of initiator (3.50%), there is no benefit in cup gel time with the additional initiator.

Material Temperature: Cup gel time of this marble clear gel coat was reduced by approximately 1 minute when the temperature was increased from 65°F to 77°F and by an additional 1 minute by increasing the temperature again from 75°F to 85°F.

Material Temperature °F	L-50a % by volume	CRSTP - 340 Gel time
65	1.00%	9.18
	1.50%	6.26
	2.00%	5.37
	2.50%	5.11
	3.50%	4.53
77	1.00%	4.37
	1.50%	5.93
	2.00%	4.9
	2.50%	4
	3.50%	3.58
85	1.00%	4.92
	1.50%	3.95
	2.00%	3.63
	2.50%	3.30
	3.50%	3.08

**Conclusion:**

Increasing the MEKP concentration from 1.50% to 2.00% will shorten the cup gel time by 30 seconds to 1 minute. Increasing the temperature from 65°F to 85°F shortened the cup gel time by approximately 1 minute.