CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	10/09/2014
Experimenters:	George Liang, Uyen Huynh
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #4
Substrates:	Glass/Quartz, Chrome
PartType:	Coupon
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate supplied products for glass streaking and smearing

Experimental Procedure:

Supplied products were used at the supplied dilution at room temperature. The standard used for this test was the Consumer Specialty Products Association DCC- 09A (CSPA) Standard Guide for Evaluating Filming and Streaking of Glass Cleaners. Two supplied units, water, one conventional product and one green product green product were used. For this test, five mirrored glass panels measuring 4”x4” in size (for each solution) were cleaned and then coated with the test solutions using a cheese cloth wipe. Mirror panels are cleaned sequentially as follows:

1. Wash in warm water with hand dishwashing liquid, using a clean piece of cheesecloth as a washcloth.
2. Rinse with deionized water.
3. Rinse with acetone, reagent grade.

After the acetone rinse, any residual water was wiped off the mirror with a piece of new, dry cheesecloth. Water droplets were not allowed to dry on the panels.

Preparation of Standard Reference Streaking Solutions:
Three reference solutions were made fresh on the day of testing. The standard for a rating of “7” was made using 0.75% (actives) sodium lauryl sulfate in deionized water. For the “5” rating 0.5% (actives) sodium lauryl sulfate in deionized water was used. The final standard, “3” was made using 0.25% (actives) sodium lauryl sulfate in deionized water.

Preparation of Standard Reference Filming Solutions:
Three reference solutions were made fresh on the day of testing. First a stock solution comprised of 1.25 grams C9-C11-2.5EO nonionic surfactant was added to 1liter of deionized water. The resulting 0.125% nonionic surfactant mixture was turbid and was be kept stirred while making the following, subsequent dilutions: The standard for a rating of “7” was made using 20 mL of nonionic stock solution added to 40 mL deionized water. The “5” standard was made using 20 mL of nonionic stock solution added to 60 mL deionized water. The final standard, “3” was made using 20 mL of nonionic stock solution is added to 80 mL deionized water.

On a clean 4-inch square mirror, 10 drops of test product were placed on the surface using a disposable pipette, with 8 drops forming approximately a 2½-inch circle, and the last 2 drops added side-by-side to the center of the circle. Immediately after application, the surface was wiped in 5 back and forth cycles of the cheesecloth wiper (total of 10 passes).

Five replicate tests were used to evaluate each test product and each reference. A new cheesecloth pad assembly was used for every mirror. A minimum of fifteen minutes was allowed for complete drying, and the panels were evaluated for filming and streaking performance within 4 to 6 hours. Evaluation was conducted against the prepared streaking and filming reference standards by a group of 4 panelists. Grading was on a scale of 1-7 (no visible streaking / high streaking and no visible filming/ high filming).

Chemistries Evaluated: 7th generation; Windex; 117D-2; 117D-1; 103773;

Results:

The HCT New Tech unit had the lowest streaking rating and HOM had the lowest filming ratings. The HCT New Tech unit had the second highest filming rating. The HOM unit had the second highest streaking rating. The green product had the worst streaking and filming scores which makes sense as it was an all-purpose cleaner and not a glass cleaner. Windex had the second-best streaking score and the second-best filming score. The filming scores were all above average (<4) except the 7th Generation All Purpose. In contrast, all of the products were below average (>4) for streaking.

The table lists the cleaners and the ranking given by four panelists.

Streaking Observations

Scale: 1=good 7=bad

Cleaner	Mirror #	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Avg Streak
7th Gen	1	2	2	2	2	

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	2	3	2	2	3	
	3	2	3	2	3	
	4	2	2	2	2	
	5	2	2	2	2	2.2
Windex	1	2	2	2	4	
	2	1	4	4	6	
	3	1	3	2	5	
	4	2	6	3	6	
	5	1	3	2	3	3.1
117D-2	1	1	2	2	2	
	2	1	5	1	3	
	3	1	3	2	2	
	4	1	4	1	3	
	5	1	3	1	2	2.05
117D-1	1	5	6	4	5	
	2	5	6	3	4	
	3	5	3	3	6	
	4	5	3	3	5	
	5	3	1	3	5	4.35
103773	1	3	5	2	3	
	2	3	1	2	5	
	3	3	1	2	4	
	4	3	1	2	5	
	5	3	1	2	4	2.75

Filming

Cleaner	Mirror #	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Avg Film
7th Gen	1	2	2	2	2	
	2	3	1	3	2	
	3	3	3	2	2	
	4	2	2	3	2	
	5	2	1	2	2	2.15
Windex	1	5	3	2	3	
	2	5	4	5	4	
	3	5	5	4	2	
	4	5	3	7	4	
	5	5	4	2	2	3.95
117D-2	1	2	2	3	2	
	2	3	5	3	2	
	3	2	4	3	2	
	4	2	4	3	2	
	5	2	4	3	2	2.75
117D-1	1	5	2	3	2	
	2	4	5	3	2	
	3	4	4	3	2	
	4	3	4	3	2	
	5	4	4	3	2	3.2
103773	1	2	1	4	3	
	2	2	1	5	4	
	3	2	1	5	3	
	4	2	1	6	4	
	5	2	1	1	4	2.7

Summary:

Substrates:	Glass/Quartz, Chrome				
Contaminants:	Films, Soaps				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
		100	0.00	☑	

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SC Johnson & Son Inc	Windex Glass & More Cleaner (Spray)				
Seventh Generation	Natural Glass and Surface Cleaner	100	0.00	☐	
Fisher Scientific	Absolute Ethanol	0	0.00	☐	

Conclusion:

Two out of the three supplied units had mixed results with one having a good streaking score and the other unit had a better filming score. The third supplied unit had consistent results for streaking and filming. According to the GS 27 Standard, a glass cleaner shall achieve at least a rating of three in each of the following Consumer Specialty Products Association (CSPA) DCC 09 categories: soil removal, smearing, and streaking. The 117D-2 and 103773 both would meet this requirement for the Streaking and Filming.