CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2018
DateRun:	01/29/2018
Experimenters:	Carla De La Cruz, James Keats, Kevin Smith, Justin Rainaud
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #14
Substrates:	Glass/Quartz, Chrome
PartType:	Coupon
Contaminants:	Stickies, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate supplied products for glass cleaning using manual cleaning.

Experimental Procedure:

Pre-weighed Glass and Chrome coupons were coated with SSL Soil 2 (Glass soap scum: Water 51.5%, Hair gel 25.6%, Toothpaste 10.4%, Shaving cream 5.3%, Hair spray 3.7% and Spray deodorant 3.5%) using a hand held swab and allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.

Three coupons were placed into a Gardner Straight Line Washability unit. A Wypall L60 reinforced wipe was attached to the cleaning sled and soaked with 1 spray of cleaning solutions. Each coupon was sprayed 1 time with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 5 cycles (~10 seconds). Coupons were left to dry overnight before final weights and efficiencies were recorded.

Visual observations were made on the coupons for spotting and filming following the general guidelines set forth in the CSPA DCC 09A. Filming is best recognized as "haziness" or overall "milkiness", while streaking is best identified as dried droplets or "spotting", usually found strung together into thin white lines. Each coupon was evaluated separately for filming and streaking, (i.e., product residues without added soil), according to a scale of "1" to "7" with:

Filming	Streaking
7 = high filming	7 = high streaking (poor performance)
1 = no visible filming	1 = no visible streaking (excellent performance)

Results:

Both cleaners were effective at removing the SSL Soil 2 from both glass and chrome surfaces. Foaming Glass Cleaner Clorox had the highest efficiency at 94.35% removal on chrome. The following table lists the initial and final soil weight, and the percent weight of soil removed.

Table 1: Gravimetric Results

Cleaner	Substrate	Initial wt	Final wt	% Removed	% Average Removed
Foaming Glass Cleaner Clorox	Glass	0.1086	0.0089	91.80	90.89
		0.1063	0.0081	92.38	
		0.1180	0.0136	88.47	
	Chrome	0.1263	0.0077	93.90	94.35
		0.1109	0.0067	93.96	
		0.1099	0.0053	95.18	
Foaming Glass Cleaner Windex	Glass	0.1042	0.0127	87.81	88.26
		0.1179	0.0110	90.67	
		0.1123	0.0154	86.29	
	Chrome	0.1109	0.0051	95.40	93.61
		0.1079	0.0075	93.05	
		0.1023	0.0078	92.38	

Table 2: Visual Ratings

Cleaner	Coupon Type	Streaking			Average Streaking	Filming			Average Filming
Foaming Glass Cleaner Clorox	Glass	5	2	3	3.28	2	3	3	2.67
		4	2	2		2	2.5	3	
		6	3.5	2		2	2.5	4	

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	Chrome	4	4	3	3.50	4	4.5	2	3.56
		3	4	4		4	5	3	
		3	3.5	3		3	3.5	3	
Foaming Glass Cleaner Windex	Glass	4	2	2	2.89	1	2.5	3	2.22
		4	2	2		1	2.5	3	
		5	2	3		2	2	3	
	Chrome	2	1.5	1	1.39	1	1.5	1	1.11
		2	1.5	1		1	1	1	
		1	1.5	1		1	1.5	1	

Table 3: Overall Average Visual Ratings Per Substrate

Cleaner - Substrate	Substrate	Average S	Average F
Foaming Glass Cleaner Clorox	Glass	3.28	2.67
	Chrome	3.50	3.56
Foaming Glass Cleaner Windex	Glass	2.89	2.22
	Chrome	1.39	1.11

Summary:

Substrates:	Glass/Quartz, Chrome
Contaminants:	Stickies, Soaps

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Brand Buzz	Clorox Foaming Glass Cleaner	100%	92.62	☑	
SC Johnson & Son Inc	Windex Foaming Glass Cleaner	100%	90.94	☑	

Conclusion:

Each of the cleaners was effective in soil removal of above 80% for each surface. Foaming Glass Cleaner Clorox resulted with the highest soil removal efficiency at 94.35% on chrome, and the highest on glass at 90.89%. Based on the filming and streaking table, we can see that overall Foaming Glass Cleaner Windex was the highest performing glass cleaner, doing significantly better on chrome in both filming and streaking, and moderately better on glass.