CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2013
DateRun:	12/09/2013
Experimenters:	Jason Marshall, Junhee Cho
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Glass/Quartz, Chrome
PartType:	Coupon
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate the supplied products for glass cleaning using manual cleaning

Experimental Procedure:

The supplied cleaning product was used at the recommended concentration (0.25 oz/gal, ~0.2%). The two comparative products were used at the supplied ready to use concentration.

Preweighed chrome, ceramic and fiberglass, coupons were coated with SSL Soil 2 (Glass soap scum) using a handheld 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 X60 reinforced wipe was attached to the cleaning sled and soaked with 1-2 sprays 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 20 cycles (~33 seconds). At the end of the cleaning, coupons were blotted once with a dry paper towel. Final weights were measured and efficiencies were calculated and 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. Three technicians recorded observations and the overall average was calculated. Each coupon was evaluated separately for filming and streaking, (i.e., product residues without added soil), according to a scale of "1" to "7" where:

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

Chemistries Evaluated: nClean; Windex; Seventh Generation Free & Clear Glass and Surface Cleaner

Results:

The supplied product removed over 85% of the bathroom soap scum soil from the surfaces using manual cleaning. The two commercially available products removed more than 90%. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
nCleans - glass			
	0.0561	0.0020	96.43
	0.0398	0.0038	90.45
	0.0570	0.0050	91.23
nCleans - chrome			
	0.0696	0.0113	83.76
	0.0589	0.0098	83.36
	0.0480	0.0065	86.46
Windex - glass			
	0.0344	0.0009	97.38
	0.0221	0.0016	92.76
	0.0243	0.0016	93.42
Windex - chrome			
	0.0810	0.0048	94.07
	0.0510	0.0044	91.37
	0.0348	0.0002	99.43
7th Gen Glass - glass			
	0.0708	0.0026	96.33

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	0.0336	0.0009	97.32
	0.0321	0.0044	86.29
7th Gen Glass - chrome			
	0.0705	0.0062	91.21
	0.0715	0.0092	87.13
	0.0553	0.0046	91.68

Visual inspection of the glass coupons showed that the Windex had the lowest amount of filming and streaking followed by nCleans. The table lists the individual and average scores for the three products.

Visual	Filming			Average	Streaking			Average
nCleans	2	2	2	3.3	2	2	2	3.0
	7	6	5		4	6	4	
	2	2	2		2	3	2	
Windex	2	5	2	2.9	2	4	2	2.2
	3	2	2		2	2	2	
	2	3	5		2	2	2	
7th Gen	4	5	6	4.1	3	6	6	4.4
	4	6	6		3	7	6	
	2	2	2		3	3	3	

Summary:

Substrates:	Glass/Quartz, Chrome				
Contaminants:	Films, Soaps				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Geophia	nClean	0.21	88.62	☑	
SC Johnson & Son Inc	Windex Glass & More Cleaner (Spray)	100	94.74	☑	
Seventh Generation	Natural Glass and Surface Cleaner	100	91.66	☑	

Conclusion:

The supplied product was comparable with the “green” commercial product and slightly lower than the conventional product for soil removal. It compared well with the conventional product for the filming and streaking assessment and outperformed the green commercial product.