CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	04/07/2014
Experimenters:	Junhee Cho, Loc Nguyen
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #2
Substrates:	Glass/Quartz, Chrome
PartType:	Coupon
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	The purpose of this test is to check whether the supplied cleaners are effective in removing SSL Soil 2 (Glass soap scum) from the surface of the Glass, Chrome and Mirror coupons.
Experimental Procedure:	Supplied products were used in full concentration (RTU Product). Pre-weighed Glass, Chrome, and Mirror 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 handheld swab and allowed to dry for 24 hours at room temperature. The SSL Soil2 was soiled in the surface of the coupons. Coupons were left for 3-4 hours to dry. The contaminated coupons were weighed again to determine the amount of soil added. Three coupons were placed in a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 4-6 sprays of cleaning solutions. Each coupon was sprayed 1-2 times with the same cleaning solution. The cleaning unit was run for 5 cycles (~10seconds). At the end of the cleaning, bottom part of the coupons was wiped once with a dry paper towel. After cleaning, cleaned coupons were left for 5 -6 hours to dry; possible residual cleaners on coupons from cleaning process were controlled. Final weights were recorded, 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. 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)
Results:	All four supplied products removed over 85% of the glass soap scum using manual cleaning. Both Replenish glass cleaner reached overall 90% removal efficacy; both products were more effective on mirror and chrome than glass surface. In visual analysis, the filming and spotting levels on glass surface from the Replenish Glass TN-1300-87Dct was below the acceptable level from Green Seal. But the overall visual analysis passed the Green Seal standard. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for soil used.

Cleaner	Initial wt	Final wt	% Removed
Replenish Glass TN-1300-87D - Mirror			
	0.0580	0.0067	88.45
	0.0675	0.0075	88.89
	0.0861	0.0065	92.45
Replenish Glass TN-1300-87D - Chrome			
	0.1448	0.0068	95.30
	0.1223	0.0065	94.69
	0.0942	0.0068	92.78
Replenish Glass TN-1300-87D - Glass			
	0.1070	0.0134	87.48
	0.0739	0.0086	88.36
	0.1144	0.0074	93.53

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Replenish Glass TN-1300-88D - Mirror			
	0.1264	0.0169	86.63
	0.1626	0.0104	93.60
	0.0767	0.0077	89.96
Replenish Glass TN-1300-88D - Chrome			
	0.2182	0.0154	92.94
	0.4937	0.0101	97.95
	0.4950	0.0114	97.70
Replenish Glass TN-1300-88D - Glass			
	0.2783	0.0396	85.77
	0.1824	0.0158	91.34
	0.2148	0.0321	85.06
409 Glass and Surface - Mirror			
	0.3076	0.0145	95.29
	0.2792	0.0106	96.20
	0.1475	0.0097	93.42
409 Glass and Surface - Chrome			
	0.8469	0.0101	98.81
	0.7217	0.0183	97.46
	0.4533	0.0152	96.65
409 Glass and Surface - Glass			
	0.0824	0.0044	94.66
	0.0954	0.0079	91.72
	0.0950	0.0022	97.68
7th Gen Glass and Surface - Mirror			
	0.0245	0.0068	72.24
	0.0297	0.0037	87.54
	0.0349	0.0053	84.81
7th Gen Glass and Surface - Chrome			
	0.0528	0.0088	83.33
	0.0603	0.0048	92.04
	0.0921	0.0055	94.03
7th Gen Glass and Surface - Glass			
	0.0542	0.0043	92.07
	0.1321	0.0046	96.52
	0.0949	0.0068	92.83

Visual Ratings

		Tester 1		Tester 2			
Product	Substrate	Filming Visual Observation	Streaking Visual Observation	Filming Visual Observation	Streaking Visual Observation	Average Filming	Average Streaking
Replenish Glass TN-1300-87D	Glass	4	3	4	3	3.67	3.17
		3	3	4	3		
		4	3	3	4		
	Mirror	1	1	2	2	2.33	2.33
		2	2	2	2		
		3	3	4	4		
Replenish Glass TN-1300-88D	Glass	3	2	2	3	2.67	3.33
		2	3	2	4		
		3	3	4	5		
	Mirror	1	1	2	2	2.00	2.17
		2	3	3	2		
		2	2	2	3		
409 Glass and Surface	Glass	4	3	3	3	3.33	3.17
		4	4	4	3		

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		3	3	2	3		
	Mirror	2	2	2	2	2.33	2.50
		2	3	2	2		
		3	3	3	3		
7th Gen Glass and Surface	Glass	3	3	2	3	2.33	2.50
		3	3	2	2		
		2	2	2	2		
	Mirror	2	2	4	5	3.50	3.67
		3	3	5	5		
		4	4	3	3		

Summary:

Substrates:	Glass/Quartz, Chrome				
Contaminants:	Films, Soaps				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Vi-Jon	Replenish Glass TN-1300-87D	100	91.33	☑	
Vi-Jon	Replenish Glass TN-1300-88D	100	91.22	☑	
Clorox Company	Formula 409 All Purpose Cleaner	100	95.77	☑	
Seventh Generation	Free & Clear All Purpose	100	88.38	☑	

Conclusion:

Both the supplied cleaners 87 DD and 88 DD were effective in cleaning the SSL Soil2 from the surface of the glass, mirror and chrome. Streaking and filming levels were both better than the recommended guideline of 3. Each compared closely with the two industry comparative products.