CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	06/24/2014
Experimenters:	Loc Nguyen, Jonathan Oljey
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Glass/Quartz, Chrome
PartType:	Part
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate supplied products for glass cleaning using manual cleaning
Experimental Procedure:	Supplied products were diluted with room temperature water to the requested dilution. Preweighed Glass;Chorme;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 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 spray of cleaning solutions. Each coupon was sprayed 1-3 times 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). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded and efficiencies 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) Chemistries Evaluated: EcoGreen; Windex; MD Stetson Vision;

Results:

Cleaner	Initial wt	Final wt	% Removed
EcoGreenCleanGlass_Chrome_GlassSoil_06_23_14			
	0.0401	0.0090	77.56
	0.0379	0.0061	83.91
	0.0532	0.0313	41.17
EcoGreenCleanGlass_Mirror_GlassSoil_06_23_14			
	0.0729	0.0089	87.79
	0.0429	0.0084	80.42
	0.0460	0.0115	75.00
EcoGreenCleanGlass_Glass_GlassSoil_06_23_14			
	0.0659	0.0128	80.58
	0.0523	0.0122	76.67
	0.0595	0.0116	80.50
Windex_Glass_GlassSoil_06_23_14			
	0.2405	0.0071	97.05
	0.4600	0.0092	98.00
	0.1337	0.0087	93.49
Windex_Mirror_GlassSoil_06_23_14			
	0.5213	0.0181	96.53
	0.3431	0.0052	98.48
	0.5661	0.0047	99.17
Windex_Chrome_GlassSoil_06_23_14			
	1.0054	0.0062	99.38
	0.4433	0.0116	97.38

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	0.5079	0.0104	97.95
MDVision_Glass_GlassSoil_06_23_14			
	0.4509	0.0275	93.90
	0.1372	0.0421	69.31
	0.2672	0.0314	88.25
MDVision_Mirror_GlassSoil_06_23_14			
	0.1271	0.0285	77.58
	0.1055	0.0156	85.21
	0.1258	0.0074	94.12
MDVision_Chrome_GlassSoil_06_23_14			
	0.1598	0.0315	80.29
	0.7350	0.0449	93.89
	0.2220	0.0389	82.48

From the above gravimetric analysis, we can see that Windex performed the best, followed by MDVision and EcoGreen, with EcoGreen performing significantly worse than the competing products.

Cleaners	Substrate	S1	F1	S2	F2	S3	F3	S4	F4	S5	F5	Avg. S	Avg. F
Eco-Green Clean Glass	Mirror	4.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	4.4	4.8
Eco-Green Clean Glass	Mirror	4.0	4.0	5.0	4.0	6.0	4.0	5.0	4.0	3.0	4.0	4.6	4.0
Eco-Green Clean Glass	Mirror	5.0	4.0	5.0	4.0	6.0	5.0	5.0	4.0	3.0	4.0	4.8	4.2
Eco-Green Clean Glass	Glass	3.0	5.0	4.0	5.0	5.0	6.0	5.0	4.0	2.0	2.0	3.8	4.4
Eco-Green Clean Glass	Glass	4.0	4.0	4.0	4.0	5.0	6.0	4.0	3.0	4.0	5.0	4.2	4.4
Eco-Green Clean Glass	Glass	3.0	4.0	5.0	4.0	5.0	5.0	4.0	4.0	2.0	4.0	3.8	4.2
Windex	Glass	2.0	3.0	4.0	3.0	4.0	3.0	3.0	3.0	4.0	5.0	3.4	3.4
Windex	Glass	2.0	3.0	5.0	3.0	4.0	4.0	3.0	3.0	4.0	4.0	3.6	3.4
Windex	Glass	2.0	4.0	4.0	4.0	2.0	5.0	3.0	4.0	5.0	3.0	3.2	4.0
Windex	Mirror	3.0	2.0	4.0	3.0	4.0	5.0	2.0	3.0	4.0	3.0	3.4	3.2
Windex	Mirror	2.0	2.0	4.0	2.0	5.0	4.0	2.0	3.0	4.0	5.0	3.4	3.2
Windex	Mirror	3.0	3.0	4.0	3.0	4.0	4.0	2.0	2.0	4.0	4.0	3.4	3.2
MD Vision	Glass	4.0	5.0	2.0	5.0	5.0	5.0	5.0	5.0	4.0	2.0	4.0	4.4
MD Vision	Glass	4.0	4.0	3.0	4.0	6.0	5.0	6.0	6.0	2.0	2.0	4.2	4.2
MD Vision	Glass	4.0	4.0	3.0	4.0	5.0	4.0	4.0	4.0	4.0	2.0	4.0	3.6
MD Vision	Mirror	5.0	5.0	2.0	5.0	5.0	4.0	5.0	5.0	5.0	3.0	4.4	4.4
MD Vision	Mirror	5.0	4.0	2.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	4.0	4.0
MD Vision	Mirror	4.0	4.0	1.0	4.0	4.0	5.0	4.0	4.0	5.0	4.0	3.6	4.2

Average Streaking and Filming Results

	Streaking	Filming
Eco-Green	4.6	4.3

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Clean Glass		
	3.9	4.3
Windex	3.4	3.6
	3.4	3.2
MD Vision	4.1	4.1
	4.0	4.2

Summary:

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

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
A & C Green Cleaner LLC	A & C All Purpose Regular	100	75.95	☐	
SC Johnson & Son Inc	Windex Glass & More Cleaner (Spray)	100	97.49	☑	
Next-Gen Supply Group	Vision Glass Cleaner	100	85.00	☑	

Conclusion:

Windex and MDVision both had removal levels greater than 85% and thus were effective at removing the majority of the soil, while EcoGreen was not effective. This was reflected in the visual analysis, where Windex was shown to have the least amount of surface residue.