CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	10/30/2015
Experimenters:	Russell Curtis, Carla De La Cruz, Abigail Giarrosso, Selena Bui, James Keats
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #2
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Dirt
Cleaning Methods:	Manual Wipe
Analytical Methods:	Visual, Timing
Purpose:	To evaluate the efficiency of a product for cleaning window surfaces
Experimental Procedure:	Three separate 30”X40” section of window was marked off as a testing surface. Five grams of AATCC soil 122 and 400 ml water was combined to create a representative indoor soil solution. The mixture was applied by taking a paint roller and soaking it in the soil solution. The wet roller was passed over a single window section 25 times. The soiled surface was allowed to dry for 20 minutes. Once the soil was dry, testing took place following the manufacturer’s cleaning recommendations. For cleaning using the solutions and paper towel, a bottle containing the cleaning liquid was weighed prior to spraying window. The window was sprayed until the tester believed the window to be covered in a fine mist over the test surface and a second weight was recorded to determine the amount of cleaner used. The number of sprays was also recorded. The towel was then wiped over the window until the tester felt the cleaning was completed. Timing will start upon the initial spraying of the surface and end when the third window is completed. Time to clean each window will be recorded as well as the overall time. The number of paper towels used was recorded as well as the number of folds made during cleaning. For the supplied tool and microfiber, the weight of the cleaning solution was measured prior to applying 2 sprays to the microfiber and then after spraying the towel. Timing began at the initial spraying of the towel and concluded at the end of cleaning the third window. Individual window cleaning times were recorded as well as the overall cleaning time. Other observations were recorded about height of tester, use of step ladder Tools Evaluated: Paper Towel- Bounty Dura Towel, Unger Microfiber Pad and holder. Cleaning Solution: Windex
Results:	The paper towel cleaning on average used more cleaning product and required more time to complete the cleaning of three windows. The paper towel cleaning averaged just over 3 minutes and 17 seconds to clean and used about 14 grams of cleaning solution to complete three windows. Tester 1, being the shortest (5’2”) participant, needed the use of a step stool. The stool resulted in an average of 12 seconds to each window section cleaned for both the paper towel and the tool.

Tester 1	Time	Sprays	Bottle wt	Wt of cleaner
paper towel	01:15.8	9	165.4521	6.0617
	1:32	9	159.3904	7.7584
	1:29	9	151.632	5.5402
	total time	146.0918	Total wt used	
	04:15.8		19.3603	
Averaged 10-14 seconds between windows to move stool				
used ladder	1 towel	3 folds		
Tester 2	Time	Sprays	Bottle wt	Wt of cleaner
paper towel	46	8	140.36	3.3305
	47	8	137.0295	4.9207
	47	8	132.1088	5.5715

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	total time	126.5373	Total wt used	
	2:20			13.8227
	1 towel	3 folds		
Tester 3	Time	Sprays	Bottle wt	Wt of cleaner
paper towel	27.41	7	124.0888	3.9083
	25.5	5	120.1805	3.4839
	24.53	4	116.6966	2.5453
	total time	114.1513	Total wt used	
	01:17.5		9.9375	
	1 towel	1 fold		

The cleaning time for the Unger tool averaged 1 minute 36 seconds to clean the three windows, using 3.7 grams of cleaner.

Tester 1	Time	Sprays	Bottle wt	Wt of cleaner
tool	38.31	2	151.6683	0.7067
	42.28	2	150.9616	1.0958
	44.63	2	149.8658	1.3426
	total time	148.5232	Total wt used	
	02:05.2		3.1451	
Tester 2	Time	Sprays	Bottle wt	Wt of cleaner
tool	28.91	2	126.5169	1.0868
	28.23	2	125.4301	0.8989
	28.48	2	124.5312	0.4432
	total time	124.088	Total wt used	
	1:27			2.4289
Tester 3	Time	Sprays	Bottle wt	Wt of cleaner
tool	29.23	2	108.411	1.0141
	25.16	4	107.3969	1.2428
	22.38	2	106.1541	1.4367
	total time	104.7174	Total wt used	
	01:16.8		3.6936	

In each test run tester 1 was the slowest and tester 3 was the fastest. The difference between cleaning times and amount used were minimized when using the Unger tool as compared to paper towel. The tool provides a more consistent and efficient cleaning method for windows.

Summary:

Substrates:	Glass/Quartz				
Contaminants:	Dirt				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Water	Water	100		☐	Paper towel 3:17 using 14.4 g cleaner
Water	Water	100		☑	Unger Tool 1:36 using 3.1 g of water

Conclusion:

In each test run tester 1 was the slowest and tester 3 was the fastest. The difference between cleaning times and amount used were minimized when using the Unger tool as compared to paper towel. The tool provides a more consistent and efficient cleaning method for windows, working twice as fast and requiring 4.5 times less cleaning product.