CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	08/31/2015
Experimenters:	George Liang, Russell Curtis
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 supplied product's ability to remove contaminants from window surfaces
Experimental Procedure:	The purpose of this evaluation was to assess effectiveness of window cleaning tools in realistic scenarios.

One 30"X40" section of window was marked off as a testing surface. To the surface, 5 grams of AATCC was mixed in 400 ml water to create a soil solution. The mixture was applied by taking a paint roller and soaking it in the soil solution and then swiping the paint roller on the window surface 25 times. The soiled surface was allowed to dry for 20 minutes. Once the soil was dry, testing took place for all the cleaning tools in way that they would be used in real world conditions. For the micro fiber cloth it was tested attached to the supplied tool and separately as a towel. For the first run, microfiber towel was spayed once with a window cleaner then wiped the microfiber on the window 10 times. The second run only used the supplied microfiber as a towel which meant that the cleaner was sprayed on the window then the window was wiped 10 times. The third scenario tested the paper towel (Bounty DuraTowel 2 ply sheet) by spraying one spray of cleaning spray on the window then wiping 10 times. Finally the Unger cleaning pad tool which had the cleaner sprayed on the pad was used to wipe the window 10 times. Each scenario was run 3 times for each product. Each run was video recorded with limited lighting so the cleaning could be seen more visibly on the camera. After each test was run the effectiveness of the product was determined by obtaining 4 independent visual rankings of streaking and filming from lab staff. Additionally, the time it took to clean the window for each method was determined using the footage and from timing using a stop watch. This testing was done by multiple people and was evaluated by at least four different individuals.

The evaluations were based on the following scale:
Filming Streaking
7 = high filming 7 = high streaking (poor performance)
1 = no visible filming 1 = no visible streaking (excellent performance)

Tools Evaluated: Microfiber towel, Paper Towel- Bounty DuraTowel, Unger Microfiber Pad

Results:

Visual Analysis									
Cleaning Tool	Test	Filming Rating				Streaking Rating			
		1	2	3	4	1	2	3	4
Microfiber Towel	1	2	2	1.5	2.5	2.5	3	1.5	2
(spray on towel)	2	2	1.5	2.5	1.5	2.5	2.5	1.5	2
	3	5	4	3	3	5	4	1.5	2
Microfiber towel	1	1.5	2	1.5	2	2.5	2	2	2
(spray on window)	2	1	2	1.5	1.2	1	2	1.5	1.2
	3	1	2	1.2	2	2	2	1	1.25
Paper Towel	1	1.5	3	3	3	1	1	2.5	1.5
	2	2	2.5	4	4	6	4	4	6
	3	4	2.5	2.5	2.5	4	5	6	6
Unger Microfiber	1	4	3.5	3	2.5	5	4	3.5	2.5
Pad Tool	2	3.5	1.5	2.5	4	1.5	2	1.8	2
	3	1.5	1	2.5	2	2	2	2	2

Summary

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Cleaning Tool	Ave Filming	Ave Streaking	Time (s)
Microfiber (spray on towel)	2.54	2.5	44.3
Microfiber (spray on the window)	1.58	1.7	16.7
Paper Towel	2.88	3.92	18.3
Unger Microfiber Pad Tool	2.63	2.53	18.0

Summary:

Substrates:	Glass/Quartz
Contaminants:	Dirt

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Water	Water	100		☐	Microfiber (spray on towel) F 2.54, S 2.50 Time (s) 44.3
Water	Water	100		☐	Microfiber (spray on the window) F 1.58 S 1.70 Time 16.7
Water	Water	100		☐	Paper Towel F 2.88 S 3.92 Time 18.3
Water	Water	100		☑	Unger Microfiber Pad Tool F 2.63 S 2.53 Time 18.0

Conclusion:

From all appearances it seems that the microfiber spray on the window performed the best out of any tool, however upon further inspection of the video. It appears that that part of the testing was done improperly done and a wipe back and forth was counted as one wipe instead of 2. This testing evaluated the Unger Microfiber pad as being closest to the performance of the previous test. This test has shown itself to be unreliable for an evaluation of time testing. In order to evaluate the effects of time on the cleaning process of the tools new testing will need to be devised. The Unger Microfiber pad tool has shown better than paper towels in both rounds of testing.