CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010

DateRun: 05/02/2010

Experimenters: Jason Marshall, Junhee Cho

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Textile

PartType: Coupon

Contaminants: Dirt

Cleaning Methods: Mechanical Agitation

Analytical Methods: Gloss-Color Meter

Purpose: To evaluate supplied products for carpet cleaning as compared to an industry standard product using extraction cleaning.

Experimental Procedure: Prior to soiling, a BYK spectro-guide color/gloss meter was used to establish a baseline L-value from the surface of the carpet. Each carpet was marked-off into 6 sections measuring 3.5 in wide and 6 in long. (The carpeting was not cut into individual pieces as it would be too difficult to physically soil and clean smaller carpet sections.) Six readings were taken in each grid area to obtain baseline readings. Modifications to the above-mentioned standard included: (1) omitting the use of milling stones and (2) replacing the Zytel Type 6,6 nylon pellets with Nalgene tubing cut into 1/8 inch pieces, or 'pellets'. According to the standard, approximately 1000 grams of pellets should be used for every 12 grams of soil or, 83 grams of pellets used per gram of soil. S100 also suggests using 500 grams of pellets for each soil under investigation (in this case, one) for carpet measuring 10.375 inch x 39.375 inch (408.5 sq. in.). This equals 1.22 (500/408.5 = 1.22) grams of pellets per square inch of carpet. Since the Lab had 174 grams of tubing/pellets at its disposal, two grams of the AATCC soil were needed to artificially contaminate the carpet.

The carpet was cut into 7.375 inch x 19.6 inch (144.54 sq. in.) pieces. The carpet pieces were soiled by placing one piece of carpet into a 1-gallon can, making sure the carpet lined the inner wall of the can. The plastic-tubing pieces were poured into the bucket and the soil was distributed along the width of the can. The can was lidded and placed into a harness attached to a crank shaft. The crank was turned at an average rate of 42 rpm by hand for 5 minutes in one direction, followed by 5 minutes of rotation in the opposite direction. At the end of the 10-minute soiling regime, the carpet was placed onto a carpet template and vacuumed with a vacuum cleaner for 3 strokes in the forward direction followed by 3 strokes in the backward direction. The carpet pieces were evaluated again for L-value levels.

The carpet sections were then cut down the middle, length-wise. Each section was saturated with the diluted cleaning product at room temperature and allowed to soak for 10 minutes. After soaking, the cleaning solution and soil was removed from the surface using a Crusader Manufacturing Inc Carpet Spotter Model 3000. About 60 seconds of extraction took place (6-7 passes) of the soiled-sprayed surface was conducted. A third and final series of color meter readings were recorded for each cleaned section. Products and dilutions used were #120 Peroxide Mulitsurface Cleaner at 128:1 and 64:1; #220 Peroxide Mulitsurface Cleaner 128:1 and 64:1; Liquid Formula 90 at 640:1.

Results: The two supplied products at the higher concentrations worked better than the industry comparative product. Both dilutions for each product worked better than water alone at removing the soil from the carpet using hot water extraction. The table lists the color readings made for each section of carpet cleaned for each product.

Cleaner	Part	Initial	Dirty	Clean	Initial-Dirty	Initial-Clean	%Removed	Ave Removal
Chemspec Liquid 90 1:640	A	78.24	69.12	72.65	9.12	5.59	38.7	50.4
	B	78.33	60.63	74.73	17.7	3.6	79.7	
	C	78.51	64.03	68.77	14.48	9.74	32.7	
MD Stetson PC 120 1:64	A	79.19	65.28	75.67	13.91	3.52	74.7	58.1
	B	78.07	63.24	71.95	14.83	6.12	58.7	
	C	77.2	63.77	69.27	13.43	7.93	41	
MD Stetson	A	78.88	66.64	72.14	12.24	6.74	44.9	41.3

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PC 120 1:128								
	B	77.98	61.54	65.96	16.44	12.02	26.9	
	C	79.68	62.07	71.24	17.61	8.44	52.1	
MD Stetson PC 220 1:64	A	78.33	65.61	73.95	12.72	4.38	65.6	65.9
	B	79.12	64.1	73.09	15.02	6.03	59.9	
	C	78.86	63.87	74.71	14.99	4.15	72.3	
MD Stetson PC 220 1:128	A	79.37	65.72	74.41	13.65	4.96	63.7	44.8
	B	79.29	61.89	66.37	17.4	12.92	25.7	
	C	78.34	62.22	69.47	16.12	8.87	45	
Water	A	78.98	69.15	70.85	9.83	8.13	17.3	22.2
	B	79.84	65.36	71.26	14.48	8.58	40.7	
	C	79.54	66.77	67.88	12.77	11.66	8.7	

Summary:

Substrates:	Textile				
Contaminants:	Dirt				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Chemspec	Liquid Formula 90	0.156	0.00	☑	50.4% improvement
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner	1.56	0.00	☑	58.1 % improvement
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner	0.78	0.00	☐	41.3 % improvement
Next-Gen Supply Group	PC 220 Peroxide Multipurpose Cleaner	1.56	0.00	☑	65.9 % improvement
Next-Gen Supply Group	PC 220 Peroxide Multipurpose Cleaner	0.78	0.00	☐	44.8% improvement
Water	Water	100	0.00	☐	22.2 % improvement

Conclusion: Both the supplied products at the 1:64 dilution worked better than the comparative product using hot water extraction.