CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2017
DateRun:	08/15/2017
Experimenters:	George Liang, Vinh Tran
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #4
Substrates:	Carpet
PartType:	Coupon
Contaminants:	Dirt
Cleaning Methods:	Manual Wipe
Analytical Methods:	Light Meter, Visual
Purpose:	To evaluate supplied product for carpet cleaning as compared to an industry standard product.
Experimental Procedure:	The procedure followed is a modified version of the Institute of Inspection Cleaning and Restoration Certification (IICRC) Standard and Reference Guide S100. Much of the testing was modeled after Appendix D, IICRC Carpet Cleaning Methods Testing Protocol. Three pieces of carpet were 3.5"x18" each, and then marked-off into three sections measuring 3.5"x 6" each. A BYK spectro-guide color/gloss meter was used to establish a baseline L-value from the surface of each carpet section. Five readings were taken in each grid area to obtain baseline readings. The carpets were then soiled using 174 grams of tubing/pellets with two grams of the AATCC soil to artificially contaminate the carpet. Each carpet strip was placed into a one 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 covered with a lid and placed into a harness attached to a crank shaft. The crank was turned at an average rate of 42 rpm by hand for five minutes in one direction, followed by five minutes in the opposite direction. After the 10-minute soiling regime, the carpet was placed onto a carpet template and vacuumed for three strokes in the forward direction followed by three strokes in the reverse direction. The carpet pieces were evaluated again for L-value levels. Each carpet strip was then fit into the Gardner Straight Line Washability Unit. Each marked off section of the carpet was sprayed 15 times with the cleaning product and allowed to soak for 30 seconds. A Kimberly-Clark Wypall reinforced paper towel was attached to the cleaning sled, and sprayed with the same cleaning product until the towel was saturated (approx. 15 sprays). After soaking, the towel/sled was placed on one end of the carpet section and the manual wipe unit ran for 91 cycles (approx. 2.5 minutes). Every 30 cycles, each section of carpet was sprayed six times with the cleaning solution. The carpet was allowed to dry overnight, and a third and final series of color meter readings were recorded for each cleaned section. A panel of four was used to confirm the visual rankings of cleaners from 1 being the best to 3 being the least effective cleaner. Using the same procedure, the carpets were re-soiled to assess whether the cleaned carpets would absorb dirt again after being cleaned.
Results:	To effectively compare the cleaners, we determined the % detergency for each cleaning solution. This was done by taking the initial, dirty, and clean L-value readings for the carpets before and after cleaning the carpets and after resoling the carpets. The carpets were also visually ranked by a panel of four to reach a consensus on the most effective to the least effective cleaning agent.

Light Meter Results:

Cleaner	Initial L	Dirty L	Clean L	% det.	Avg. % det.
PC120					
	63.46	54.99	58.02	35.77	29.33
	63.85	53.71	55.8	20.61	
	65.74	49.79	54.83	31.6	
PC119					
	64.69	54.2	57.48	31.27	32.33
	63.23	40.09	46.99	29.82	
	64.5	52.89	57.06	35.92	
Resolve					
	63.97	48.53	53.28	30.76	28.79
	61.73	51.72	54.34	26.17	
	63.25	46.27	51.27	29.45	

Light Meter Re-Soiling Results:

Cleaner	Clean L	Re-Dirty L	Re-Dirty(%)	Avg. Re-Dirty (%)
PC120				

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	58.02	41.92	27.75	23.61
	55.8	42.06	24.62	
	54.83	44.71	18.46	
PC119				
	57.48	41.3	28.15	21.18
	46.99	42.28	10.02	
	57.06	42.58	25.38	
Resolve				
	53.28	42.41	20.4	20.47
	54.34	42.23	22.29	
	51.27	41.67	18.72	

Final Visual Rating: The cleaners were ranked from 1 being the most effective to 3 being the least effective cleaner in removing dirt soil from the carpets.

Cleaner	Visual Ranking
PC120	1
PC119	2
Resolve	3

Both sampled cleaners PC120 and PC119 were as effective as the comparative cleaner Resolve, with respective percent detergency of 29.33%, 32.33% as compared to 28.79%. In addition, PC120 and PC119 were similar in effectiveness with only a difference of 2% in percent detergency.

The visual ranking almost matched with the L-values obtained from the gloss meter readings; with the least effective cleaner being Resolve in both cases. In addition, PC120 and PC119 visually looked just as effective as one another; with PC120 only marginally looking more effective than PC119.

The carpets treated by the sampled cleaners were observed to have similar amounts of additional contaminants after the re-soiling process in relation to the carpets cleaned with the comparative cleaners. Carpets cleaned with PC120 had a difference of only 2.43% contaminants added to carpets cleaned with PC119; with respective contaminants added to be 23.61% as compared to 21.18%.

In conclusion, the most effective cleaner to least effective cleaner is listed as the following: PC119, PC120, and Resolve.

Summary:

Substrates:	Carpet				
Contaminants:	Dirt				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Next-Gen Supply Group	PC 120 Peroxide Mulitsurface Cleaner			☑	
Fisher Scientific	Absolute Ethanol	0	0.00	☐	
Next-Gen Supply Group	PC 119	1:64		☑	
Reckitt Benckiser	Resolve Spot and Stain Remover-Carpet Cleaner	100		☑	

Conclusion: Both sampled cleaners, PC120 and PC119, were as effective as the comparative cleaner.