CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2010
DateRun:	06/09/2010
Experimenters:	Jason Marshall, Timothy Weil, Johnny Le
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Vinyl Composite Tiles
PartType:	Coupon
Contaminants:	Carbon Deposits, Greases, Oil, Food
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Gloss-Color Meter
Purpose:	To evaluate supplied product for grease removal from floor surfaces following CSPA DCC 17
Experimental Procedure:	The supplied product was tested using the CSPA DCC 17 - Greasy Soil Test Method for Evaluating Spray-and-Wipe Cleaners Used on Hard, Non-Glossy Surfaces standard. A few minor deviations from the standard were incorporated into the test conducted. The Greasy Soil Test Method is a standard method that evaluates the cleaning performance of products intended for use on washable walls or other hard, non-glossy surfaces. This method provides instructions for soil application, cleaning and evaluation of spray-and-wipe cleaners under controlled cleaning conditions. This method can be used to assess product performance for cleaning a fabricated greasy soil blend applied to painted wallboard tiles. It is not inclusive of all soil or substrates typically encountered by a consumer while using these products. Latex painted vinyl composite tiles were substituted for masonite wallboard tiles. These tiles were soiled with a mixture of melted, oily soils containing a small amount of carbon black. The tiles were dried overnight at room temperature. A measured amount of spray-and-wipe cleaner is applied to a reinforced paper towel was used in place of the sponge. The soaked towels were used to scrub a portion of the soiled substrate using a straight-line washability apparatus. The tile was rinsed after cleaning to remove loosened soil. Separate soiled coupons were cleaned with the other products being evaluated instead of using the same soiled coupon as another product. This was done to eliminate any possible cross contamination of the cleaning process. Three coupons were cleaned by each cleaning product being evaluated. Cleaning performance was taken as a linear function of reflectance value, and visually evaluated by a panel of judges. Coupon preparation: Two coats of white paint solution were applied to the slightly rough side of the tiles, waiting 15 minutes between each coat. Coupons were allowed to dry overnight at room temperature, and then cure them at 50°C and 50% humidity for 24 hours. Five reflectance readings were taken for each of three separate tiles to obtain a baseline value. Soil Preparation A mixture of three cooking oils/greases was made. A melt blend of 33% vegetable shortening, 33% lard, 33% vegetable oil and 1% carbon lampblack was made up fresh for the testing. Care was taken in the application of the soil onto the coupons so that light and heavy areas were avoided. Allow the soiled tiles to dry for 24 hours at room temperature. Five reflectance readings were made for each of three soiled tiles to obtain a soiled reference value. Cleaning Test Place a soiled tile in the tray of the abrasion tester such that the direction of the soiling is perpendicular to the direction of the sponge. In place of using a sponge and pouring solution into dish for application, products were applied to the coated surfaces using 3-5 sprays from manual spray pump and 4-7 sprays onto the reinforced Wypal X60 paper towel attached to the cleaning instrument. The cleaning was performed using Gardner Straightline washability unit and conducted for the prescribed 5 cycles (10 strokes). Following the initial cycle, there was no discernable difference between the products and an additional 15 cycles were run. The coupons were immediately rinse with tap water only the surface which was scrubbed. In addition to the L-value readings, gravimetric analysis was conducted to determine soil removal. Weights were taken before soiling, after soiling and after cleaning. Results were based on percent soil removal. Cleaning data can be calculated as percent detergency in the following equation: % DET = R(cleaned) - R(soiled) / R(unsoiled) - R(soiled) X 100
Results:	The new formulation performed as well as the existing formulation and the conventional product when analyzed with both the L-values and gravimetric analysis. All three products had %DET between 63 and 65 and soil removal efficiency between 89-91%. In both cases the current product had slightly higher effectiveness. The tables list the l-value readings and gravimetric weights for each coupon cleaned. L-Value Results

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Cleaner	Initial L	Dirty L	Final L	Rc-Rs	Ru-Rs	[Rc-Rs/ (Ru-Rs)]*100	Ave
Nutrisol-Calsoft L40							
	90.59	27.26	70.04	63.33	20.55	67.55	63.84
	90.19	37.23	67.84	52.96	22.35	57.8	
	88.93	30.99	69.33	57.94	19.6	66.17	
MD Stetson 3R							
	88.26	26	54.27	62.26	33.99	45.41	65.73
	88.12	27.81	68.71	60.31	19.41	67.82	
	85.75	29.37	72.82	56.38	12.93	77.07	
Green Bridge Control 32-1							
	86.2	23.61	65.41	62.59	20.79	66.78	63.43
	85.78	24	66.29	61.78	19.49	68.45	
	81.27	35.02	63.67	46.25	17.6	61.95	

Gravimetric Results

Cleaner	Initial wt	Final wt	% Removed
Nutrisol-Calsoft L40 G			
	0.5499	0.0619	88.74
	0.6939	0.0674	90.29
	0.4194	0.0732	82.55
Nutrisol-Calsoft L40 G			
	0.4022	0.0318	92.09
	0.4446	0.0591	86.71
	0.3275	0.0376	88.52
Nutrisol-Calsoft L40			
	0.2632	0.0272	89.67
	0.3071	0.0391	87.27
	0.4560	0.0369	91.91
Nutrisol-Calsoft L40 L			
	62.0000	31.8900	48.56
	64.1700	37.3500	41.80
	62.8800	32.4800	48.35
Nutrisol-Calsoft L40 L			
	58.9000	25.7200	56.33
	61.2400	21.3600	65.12
	63.0100	23.1600	63.24
Nutrisol-Calsoft L40 L			
	63.3300	20.5500	67.55
	52.9600	22.3500	57.80
	57.9400	19.6000	66.17
MD Stetson 3R			
	0.6017	0.0943	84.33
	0.7370	0.0430	94.17
	0.4219	0.0284	93.27
Green Bridge Control 32-1			

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	0.6481	0.0471	92.73
	0.3914	0.0195	95.02
	0.2771	0.0381	86.25

Summary:

Substrates:	Vinyl Composite Tiles				
Contaminants:	Carbon Deposits, Greases, Oil, Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Next-Gen Supply Group	3R All Purpose Cleaner	2.1	90.59	☑	

Conclusion: The new formulation performed as well as the existing formulation and the conventional product. All three removed over 89% of the grease-soil mixture using manual wiping.