

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010
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 Experimenters: Jason Marshall, Junhee Cho, Timothy Weil, Johnny Le, Kathleen Tenaglia
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #1
 Substrates: Vinyl Composite Tiles
 PartType: Coupon
 Contaminants: Carbon Deposits, Greases, Food
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gloss-Color Meter
 Purpose: To evaluate supplied product for grease removal from floor surfaces following ASTM D4488 A2

Experimental Procedure: 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 light meter readings (L-values).

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 L-Value 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.

Cleaning data can be calculated as percent detergency in the following equation: % DET = $(L(\text{cleaned}) - L(\text{soiled}) / L(\text{unsoiled}) - L(\text{soiled})) \times 100$

Results: Based on the light meter reading comparisons (L values), Moby 1800 was the top performing product followed by Seventh Generation, Sanimaster and Light Duty - 0.25. The table lists the Base line, Dirty and Clean L-values as well as the calculated percent detergency.

L*Readings								
Product	Base	Dirty	Clean	Lc-Ls	Lu-Ls	(Lc-Ls)/ *100	Ave %	Rank
Seventh Generation			(Lu-Ls)					
	80.9	40.55	82.18	41.63	40.35	103.17	89.29	2
	90.66	45.87	82.22	36.35	44.79	81.16		
	90.27	40.73	82.11	41.38	49.54	83.53		
Light Duty - 0.25								
	89.2	51.78	84.72	32.94	37.42	88.03	83.19	4

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	89.65	46.47	81.05	34.58	43.18	80.08		
	89.15	54.05	82.64	28.59	35.1	81.45		
Moby 1800								
	89.2	29.11	93.04	63.93	60.09	106.39	94.63	1
	89.66	40.93	85.43	44.5	48.73	91.32		
	89.66	49.03	84.04	35.01	40.63	86.17		
Light Duty - 0.50								
	89.62	54.86	83.27	28.41	34.76	81.73	80.12	6
	90.06	26.39	82.13	55.74	63.67	87.55		
	90.58	54.4	80.12	25.72	36.18	71.09		
Sanimaster								
	90.08	53.1	86.35	33.25	36.98	89.91	88.92	3
	89.55	32.56	83.4	50.84	56.99	89.21		
	88.91	53.49	84.53	31.04	35.42	87.63		
All Purpose CC2 5 oz/ gal								
	90.87	35.77	81.6	45.83	55.1	83.18	82.24	5
	90.14	54.13	84.87	30.74	36.01	85.37		
	90.87	43.3	80.49	37.19	47.57	78.18		
Moby 1750								
	89.02	59.74	83.29	23.55	29.28	80.43	80.08	7
	89.82	53.2	83.8	30.6	36.62	83.56		
	90.85	58.94	83.27	24.33	31.91	76.25		
Tap water - MN								
	90.79	40.2	72.49	32.29	50.59	63.83	73.31	8
	90.85	23.31	77.76	54.45	67.54	80.62		
	90.63	46.07	79.7	33.63	44.56	75.47		

Summary:

Substrates:	Vinyl Composite Tiles				
Contaminants:	Carbon Deposits, Greases, Food				
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Seventh Generation	Free & Clear All Purpose	100	89.29	<input checked="" type="checkbox"/>	
Water	Water	100	73.31	<input type="checkbox"/>	
Orbio Technologies	Orbio Moby	100	94.63	<input checked="" type="checkbox"/>	
EcoLink	Sanimaster	100	88.92	<input checked="" type="checkbox"/>	

Conclusion:

All of the products worked better than the tap water alone.