

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010

DateRun: 12/07/2010

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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: $\% \text{ DET} = \frac{L(\text{cleaned}) - L(\text{soiled})}{L(\text{unsoiled}) - L(\text{soiled})} \times 100$

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.