

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2013

DateRun: 11/05/2013

Experimenters: Junhee Cho, Loc Nguyen

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Steel

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for all purpose cleaning following GS 37 requirements

Experimental Procedure: The two cleaning products were used at the provided dilutions at room temperature for all purpose cleaning. Preweighed ceramic, plastic and painted metal coupons were coated with Hucker's Soil Formulation (creamy peanut butter, salted butter, stone ground wheat flour, egg yolk, evaporated milk, distilled water, printer's ink with boiled linseed oil, saline solution) using a handheld swab and allowed to dry for 2 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.

Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 1-2 sprays of cleaning solutions. Each coupon was sprayed 1-2 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.

Results: Both products removed more than 70% of the Hucker's soil from the three surfaces using manual wiping. The Cleanovations resulted in the highest efficiency, removing just over 82% of soil. As a control water was included in testing. Water removed less than 50% of the soil under the same conditions (exception - no marble). The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-----------------------------|------------|----------|-----------|
| Cleanovations_Marble | | | |
| | 0.4733 | 0.0958 | 79.76 |
| | 0.4632 | 0.2271 | 50.97 |
| | 0.2797 | 0.0798 | 71.47 |
| Cleanovations_Plastic | | | |
| | 0.2982 | 0.0681 | 77.16 |
| | 0.4242 | 0.1350 | 68.18 |
| | 0.2770 | 0.0568 | 79.49 |
| Cleanovations_Ceramic | | | |
| | 0.2337 | 0.0035 | 98.50 |
| | 0.3718 | 0.0099 | 97.34 |
| | 0.4736 | 0.0360 | 92.40 |
| Cleanovations_Painted metal | | | |
| | 0.1905 | 0.0175 | 90.81 |
| | 0.3283 | 0.0143 | 95.64 |
| | 0.1941 | 0.0282 | 85.47 |
| 7th Generation_Marble | | | |
| | 0.2934 | 0.1797 | 38.75 |
| | 0.8947 | 0.1670 | 81.33 |
| | 0.2053 | 0.0535 | 73.94 |
| 7th Generation_Plastic | | | |
| | 0.4015 | 0.0462 | 88.49 |
| | 0.4319 | 0.1046 | 75.78 |
| | 0.2745 | 0.0523 | 80.95 |

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|------------------------------------|--------|--------|-------|
| 7th Generation_Ceramic | | | |
| | 0.4933 | 0.2863 | 41.96 |
| | 0.3321 | 0.1313 | 60.46 |
| | 0.3351 | 0.0707 | 78.90 |
| 7th Generation_Painted metal | | | |
| | 0.2020 | 0.0306 | 84.85 |
| | 0.2319 | 0.0355 | 84.69 |
| | 0.1204 | 0.0141 | 88.29 |
| Water_ceramic | | | |
| | 1.0789 | 0.7076 | 34.41 |
| | 0.9467 | 0.4993 | 47.26 |
| | 0.6136 | 0.4620 | 24.71 |
| Water_plastic | | | |
| | 0.6323 | 0.4376 | 30.79 |
| | 0.9849 | 0.5574 | 43.41 |
| | 0.8194 | 0.4008 | 51.09 |
| Water_painted metal | | | |
| | 1.0545 | 0.7027 | 33.36 |
| | 0.4104 | 0.2165 | 47.25 |
| | 0.3347 | 0.1472 | 56.02 |

Summary:

| | | | | | |
|------------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Plastic, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Amiran BioChemicals | Cleanovations All Purpose (AP) degreaser | 100 | 82.27 | <input checked="" type="checkbox"/> | |
| Seventh Generation | Natural Glass and Surface Cleaner | 100 | 73.20 | <input type="checkbox"/> | |
| Water | Water | 100 | 40.92 | <input type="checkbox"/> | |

Conclusion:

Cleanovations was found to be the more effective product for removing the Hucker's soil from various surfaces using manual wiping. It compared well to the two other cleaning products supplied for testing.