

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 05/01/2008
 Experimenters: Jason Marshall, Shweta Bansal
 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 retest Do-it-Yourself formulations for bathroom cleaning.

Experimental Procedure: The supplied cleaning products were used at the recommended concentration. Two products were included for comparison and used at its ready to use concentration.

Preweighed ceramic, plastic and steel coupons were coated with Hucker's Soil Formulation (Jif Creamy Peanut Butter 9.2%, Salted Butter 9.2%, Arrowhead Mills stone ground wheat flour 9.2%, Egg Yolk 9.2%, Evaporated milk 13.8%, Distilled water 45.8%, Printer's ink with boiled linseed oil 0.9%, Shaws saline solution 2.7%) using a handheld swab and allowed to dry for 24 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. AA Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 20 cycles (~33 seconds). Coupons were blotted dry with a clean Wypal wiper. Final weights were recorded, and efficiencies were calculated and recorded.

Results: Three of the four products were effective during the retesting of the all-purpose cleaning soil, all removing over 92% of the soil.

| Cleaner | Initial wt | Final wt | % Removed |
|---------|------------|----------|-----------|
| Steel | 0.1893 | 0.0024 | 98.73 |
| | 0.0973 | 0.0020 | 97.94 |
| | 0.2806 | 0.0034 | 98.79 |
| Plastic | 0.2608 | 0.0023 | 99.12 |
| | 0.0952 | 0.0013 | 98.63 |
| | 0.1757 | 0.0041 | 97.67 |
| Ceramic | 0.2145 | 0.0017 | 99.21 |
| | 0.1026 | 0.0025 | 97.56 |
| | 0.0651 | 0.0112 | 82.80 |
| Steel | 0.2177 | 0.0163 | 92.51 |
| | 0.2784 | 0.0078 | 97.20 |
| | 0.2608 | 0.0154 | 94.10 |
| Plastic | 0.0636 | 0.0108 | 83.02 |
| | 0.1117 | 0.0058 | 94.81 |
| | 0.1187 | 0.0041 | 96.55 |
| Ceramic | 0.1269 | 0.0016 | 98.74 |
| | 0.2035 | 0.0037 | 98.18 |
| | 0.1337 | 0.0299 | 77.64 |
| Steel | 0.2655 | 0.0052 | 98.04 |
| | 0.2762 | 0.0287 | 89.61 |
| | 0.1722 | 0.0041 | 97.62 |
| Plastic | 0.1236 | 0.0044 | 96.44 |
| | 0.1138 | 0.0083 | 92.71 |
| | 0.1767 | 0.0103 | 94.17 |
| Ceramic | 0.2307 | 0.0028 | 98.79 |
| | 0.1105 | 0.0032 | 97.10 |
| | 0.0544 | 0.0019 | 96.51 |
| Steel | 0.1696 | 0.1120 | 33.96 |

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|---------|--------|--------|--------|
| | 0.1564 | 0.2068 | -32.23 |
| | 0.2224 | 0.2314 | -4.05 |
| Plastic | 0.1265 | 0.0585 | 53.75 |
| | 0.1150 | 0.0478 | 58.43 |
| | 0.0820 | 0.0398 | 51.46 |
| Ceramic | 0.1133 | 0.0436 | 61.52 |
| | 0.2207 | 0.0960 | 56.50 |
| | 0.0403 | 0.0210 | 47.89 |

Summary:

| Substrates: | | Ceramics, Plastic, Steel | | | |
|----------------------|---------------------------------------|--------------------------|--------------------|-------------------------------------|----------------------|
| Contaminants: | | Hucker's Soil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Clorox Company | Green Works Multi-Surface Cleaner | 100 | 96.72 | <input checked="" type="checkbox"/> | |
| Clorox Company | Green Works Glass and Surface Cleaner | 100 | 92.53 | <input checked="" type="checkbox"/> | |
| EZ Clean Green | Natural Vinegar Cleaning Spray | 100 | 95.66 | <input checked="" type="checkbox"/> | |
| EZ Clean Green | Natural Soft Scrub | 100 | 36.36 | <input type="checkbox"/> | |

Conclusion:

Three products had overall average efficiencies over 85% and would be considered effective based on the SSL testing methodology. The original results in the previous trial may have been due to base weights being incorrect prior to soiling. Results from this trial more closely matched visual observations.