

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 04/17/2008
 Experimenters: 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 evaluate two Do-It-Yourself formulation following kit instructions for all purpose 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.

Prewriteed 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). Final weights were recorded, and efficiencies were calculated and recorded.

Results: The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|---------------------------------------|------------|----------|------------|
| Clorox Green Works All Purpose | 0.2485 | 11.3316 | -4460.00 |
| Steel | 0.2312 | 10.1057 | -4270.98 |
| | 0.2532 | -66.2288 | 26256.71 |
| | -0.0013 | 49.7681 | 3828415.38 |
| Plastic | 0.1948 | 49.1130 | -25112.01 |
| | 0.1948 | 48.7056 | -24902.87 |
| | 0.3703 | -61.2876 | 16650.80 |
| Ceramic | 0.1704 | -57.5792 | 33890.61 |
| | 0.2776 | -61.7541 | 22345.71 |
| Clorox Green Works Glass & Surface | 0.3268 | 0.4536 | -38.80 |
| Steel | 0.2069 | -0.2323 | 212.28 |
| | 0.2254 | -0.7152 | 417.30 |
| | 0.2409 | -0.1776 | 173.72 |
| Plastic | 0.2220 | -0.0605 | 127.25 |
| | 0.2657 | -0.1677 | 163.12 |
| | 0.6176 | 5.7989 | -838.94 |
| Ceramic | 0.2903 | 3.8990 | -1243.09 |
| | 0.2061 | 5.0259 | -2338.57 |
| EZ Clean Green Vinegar Cleaning Spray | 0.2898 | 0.1074 | 62.94 |
| Steel | 0.2343 | 0.0818 | 65.09 |
| | 0.1632 | 0.2179 | -33.52 |
| | 0.1591 | 0.0843 | 47.01 |

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|---------------------------|---------|----------|----------|
| Plastic | 0.1878 | -0.1531 | 181.52 |
| | 0.2111 | -0.1985 | 194.03 |
| | 0.4565 | -1.3103 | 387.03 |
| Ceramic | 0.2154 | -10.8201 | 5123.26 |
| | 0.2228 | -6.6022 | 3063.29 |
| EZ Clean Green Soft Scrub | -0.3492 | -1.2067 | -245.56 |
| Steel | 0.2804 | -0.1460 | 152.07 |
| | 0.2278 | 0.2671 | -17.25 |
| | 0.2904 | 0.0815 | 71.94 |
| Plastic | 0.2341 | 0.2663 | -13.75 |
| | 0.2396 | 0.4168 | -73.96 |
| | 0.2102 | -3.6910 | 1855.95 |
| Ceramic | 0.5317 | 5.2555 | -888.43 |
| | 0.2106 | 6.0967 | -2794.92 |

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 | | <input type="checkbox"/> | |
| Clorox Company | Green Works Glass and Surface Cleaner | 100 | | <input type="checkbox"/> | |
| EZ Clean Green | Natural Vinegar Cleaning Spray | 100 | | <input type="checkbox"/> | |
| EZ Clean Green | Natural Soft Scrub | 100 | | <input type="checkbox"/> | |

Conclusion:

As in the bathroom soil cleaning trial, gravimetric results were inconsistent with visual observations. Follow trial will be conducted to address issues with results.