# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2013 |
| DateRun: | 12/09/2013 |
| Experimenters: | Jason Marshall, 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 product against a conventional and green all purpose product |
| Experimental Procedure: | The supplied cleaning product was diluted with DI water at room temperature the recommended concentration for all purpose cleaning (2 oz/gallon). The other two products were used at the supplied ready to use concentration.<br>Preweighed ceramic, plastic and painted metal coupons were coated with Hucker's Soil Formulation (Jif Creamy peanut butter, salted butter, Arrowhead Mills 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.<br>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 spray of cleaning solutions. Each coupon was sprayed 1time with the same cleaning solution. Coupons soaked for 10 seconds and then the cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were weighed a final time and efficiencies were calculated and recorded.<br>Chemistries Evaluated: nClean; Formula 409; 7th Generation All Purpose |
| Results: | The nClean product was the most effective at removing the Hucker’s soil from the three surfaces using manual wiping, averaging 75% removal. The Formula 409 removed 65% and the 7th Generation product removed 60%. 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 |
|---|---|---|---|
| nCleans - ceramic | | | |
| | 0.3924 | 0.2285 | 41.77 |
| | 0.8390 | 0.5324 | 36.54 |
| | 0.4554 | 0.1695 | 62.78 |
| nCleans - plastic | | | |
| | 0.4311 | 0.0520 | 87.94 |
| | 0.4121 | 0.0300 | 92.72 |
| | 0.2179 | 0.0137 | 93.71 |
| nCleans - painted metal | | | |
| | 0.4803 | 0.0347 | 92.78 |
| | 0.3319 | 0.0370 | 88.85 |
| | 0.2228 | 0.0325 | 85.41 |
| Formula 409 - ceramic | | | |
| | 0.2625 | 0.1456 | 44.53 |
| | 0.2478 | 0.1487 | 39.99 |
| | 0.5732 | 0.4214 | 26.48 |
| Formula 409 - plastic | | | |
| | 0.1919 | 0.0255 | 86.71 |
| | 0.3180 | 0.0827 | 73.99 |
| | 0.4091 | 0.0738 | 81.96 |
| formula 409 - painted metal | | | |

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|---|---|---|---|
| | 0.2928 | 0.1614 | 44.88 |
| | 0.2480 | 0.0072 | 97.10 |
| | 0.4939 | 0.0330 | 93.32 |
| 7th Gen All Purpose - ceramic | | | |
| | 0.4089 | 0.1854 | 54.66 |
| | 0.7936 | 0.6127 | 22.79 |
| | 0.3671 | 0.1988 | 45.85 |
| 7th Gen All Purpose - plastic | | | |
| | 0.2360 | 0.0509 | 78.43 |
| | 0.0327 | 0.0014 | 95.72 |
| | 0.2453 | 0.0093 | 96.21 |
| 7th Gen All Purpose - painted metal | | | |
| | 0.2345 | 0.1076 | 54.12 |
| | 0.4165 | 0.3851 | 7.54 |
| | 0.2637 | 0.0365 | 86.16 |

Summary:

| **Substrates:** | Ceramics, Plastic, Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Hucker's Soil | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Fisher Scientific | Absolute Ethanol | 0 | 0.00 | ☐ | |
| Geophia | nClean | 1.5 | 75.83 | ☑ | |
| Clorox Company | Formula 409 All Purpose Cleaner | 100 | 65.44 | ☐ | |
| Seventh Generation | Free & Clear All Purpose | 100 | 60.16 | ☐ | |

Conclusion:

The nClean product was found to be more effective at removing the Hucker’s soil from various surfaces using manual wiping than the two commercially available products were.