

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2011

DateRun: 04/27/2011

Experimenters: Johnny Le

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Ceramics, Rubber, Steel

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate three supplied products for all purpose cleaning

Experimental Procedure: Prewieghed ceramic, polycarbonate and painted steel coupons were coated with Hucker's Soil Formulation (Jiffy creamy peanut butter, salted butter, Arrowhead Mills stone ground wheat flour, egg yolk, evaporated milk, distilled water, printer's ink with boiled linseed oil, Shaws saline solution) 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. A Kimberly-Clark Wypal reinforced paper towel 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 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: The supplied product worked as well as the two comparative products using manual cleaning for all purpose soils. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|------------------------------|------------|----------|-----------|
| Orbio 5000SC ceramic | | | |
| | 0.1142 | 0.0042 | 96.32 |
| | 0.1820 | 0.0035 | 98.08 |
| | 0.1349 | 0.0075 | 94.44 |
| Orbio 5000SC polycarb | | | |
| | 0.0720 | 0.0262 | 63.61 |
| | 0.0904 | 0.0146 | 83.85 |
| | 0.1542 | 0.0173 | 88.78 |
| Orbio 5000SC Stainless Steel | | | |
| | 0.0324 | -0.0003 | 100.92 |
| | 0.1092 | 0.0068 | 93.77 |
| | 0.0615 | 0.0014 | 97.72 |
| 3R's Ceramic | | | |
| | 0.1656 | -0.0017 | 101.02 |
| | 0.1197 | -0.0034 | 102.84 |
| | 0.1804 | 0.0097 | 94.62 |
| 3R's Polycrab | | | |
| | 0.0719 | 0.0162 | 77.47 |
| | 0.1056 | 0.0128 | 87.88 |
| | 0.0685 | 0.0148 | 78.39 |
| 3R's Stainless Steel | | | |
| | 0.0359 | 0.0042 | 88.30 |
| | 0.0893 | 0.0050 | 94.40 |
| | 0.0626 | 0.0028 | 95.52 |

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|--------------------------------|--------|--------|-------|
| Formula 409 Ceramic | | | |
| | 0.1186 | 0.0064 | 94.60 |
| | 0.1013 | 0.0067 | 93.39 |
| | 0.1181 | 0.0069 | 94.15 |
| Formula 409 Polycarb | | | |
| | 0.0422 | 0.0083 | 80.33 |
| | 0.0617 | 0.0120 | 80.55 |
| | 0.0786 | 0.0108 | 86.26 |
| Formula 409 Stainless Steel | | | |
| | 0.0459 | 0.0048 | 89.54 |
| | 0.0337 | 0.0018 | 94.66 |
| | 0.0343 | 0.0035 | 89.80 |

Summary:

| | | | | | |
|-----------------------|---------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Rubber, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Next-Gen Supply Group | 3R All Purpose Cleaner | 3 | 91.16 | <input checked="" type="checkbox"/> | |
| Clorox Company | Formula 409 All Purpose Cleaner | 100 | 89.25 | <input checked="" type="checkbox"/> | |
| Orbio Technologies | Orbio Multi-Surface Cleaner | 100 | 90.83 | <input checked="" type="checkbox"/> | |

Conclusion:

While the efficiency of the Orbio product (90.83% +/- 11.4) showed slightly lower performance on polycarbonate substrate, its overall efficiency when combining its effectiveness for all three substrates was above 90%. The performance was statistically the same as Formula 409 (89.25% +/-5.7) and 3R's product (91.16% +/-9.0).