

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007
 DateRun: 10/22/2007
 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 evaluate requested products for all purpose soil removal

Experimental Procedure: The supplied cleaning products were used at full strength.
 Prewedged fiberglass, ceramic and chrome coupons were coated with SSL Soil 3 (Hucker's Soil: Distilled water 45.8%, Evaporated milk 13.8%, Creamy peanut butter 9.2%, Salted butter 9.2%, Stone ground wheat flour 9.2%, Egg yolk 9.2%, Printer's ink with boiled linseed oil 0.9% and Saline solution 2.7%.) using a hand held 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 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 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 top cleaning product removed less than 70% of the all purpose Hucker's soil. The table lists the amount of soil added, the amount remaining, the efficiency for each coupon cleaned and the average removal from each substrate type.

| Cleaner | Substrate | Initial wt | Final wt | % Removed | Ave % | |
|-----------------|---------------|------------|----------|-----------|-------|-------|
| Clorox | Painted Steel | 0.0777 | 0.0145 | 81.34 | | 67.21 |
| | | 0.0742 | 0.0148 | 80.05 | 67.60 | |
| | | 0.0500 | 0.0293 | 41.40 | | |
| | Plastic | 0.0633 | 0.0136 | 78.52 | | |
| | | 0.0778 | 0.0193 | 75.19 | 76.61 | |
| | | 0.0766 | 0.0183 | 76.11 | | |
| | Ceramic | 0.0799 | 0.0226 | 71.71 | | |
| | | 0.0536 | 0.0436 | 18.66 | 57.42 | |
| | | 0.1083 | 0.0196 | 81.90 | | |
| | | | | | | |
| Countertop | Painted Steel | 0.0422 | 0.0022 | 94.79 | | 68.85 |
| | | 0.0663 | 0.0013 | 98.04 | 97.26 | |
| | | 0.1348 | 0.0014 | 98.96 | | |
| | Plastic | 0.0629 | 0.0236 | 62.48 | | |
| | | 0.0433 | 0.0149 | 65.59 | 65.70 | |
| | | 0.0936 | 0.0290 | 69.02 | | |
| | Ceramic | 0.0560 | 0.0304 | 45.71 | | |
| | | 0.0479 | 0.0341 | 28.81 | 43.58 | |
| | | 0.0749 | 0.0328 | 56.21 | | |
| | | | | | | |
| Seventh Kitchen | Painted Steel | 0.0905 | 0.0364 | 59.78 | | 57.36 |
| | | 0.0809 | 0.0195 | 75.90 | 71.63 | |
| | | 0.0881 | 0.0183 | 79.23 | | |
| | Plastic | 0.0424 | 0.0099 | 76.65 | | |
| | | 0.0536 | 0.0134 | 75.00 | 72.44 | |
| | | 0.0533 | 0.0183 | 65.67 | | |
| | Ceramic | 0.0569 | 0.0431 | 24.25 | | |

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| | | 0.0461 | 0.0299 | 35.14 | 28.01 | |
| | | 0.0357 | 0.0269 | 24.65 | | |
| Soft Scrub | Painted Steel | 0.0631 | 0.0514 | 18.54 | | 53.63 |
| | | 0.0876 | 0.0528 | 39.73 | 32.98 | |
| | | 0.0880 | 0.0522 | 40.68 | | |
| | Plastic | 0.1369 | 0.0894 | 34.70 | | |
| | | 0.0501 | 0.0176 | 64.87 | 47.22 | |
| | | 0.1578 | 0.0914 | 42.08 | | |
| | Ceramic | 0.0525 | 0.0124 | 76.38 | | |
| | | 0.1240 | 0.0203 | 83.63 | 80.69 | |
| | | 0.0513 | 0.0092 | 82.07 | | |
| Formula 409 | Painted Steel | 0.5980 | 0.3905 | 34.70 | | 61.52 |
| | | 0.7718 | 0.3876 | 49.78 | 33.55 | |
| | | 1.0207 | 0.8555 | 16.18 | | |
| | Plastic | 0.5136 | 0.1533 | 70.15 | | |
| | | 0.5557 | 0.0468 | 91.58 | 67.51 | |
| | | 0.5161 | 0.3056 | 40.79 | | |
| | Ceramic | 0.1013 | 0.0225 | 77.79 | | |
| | | 1.0084 | 0.1184 | 88.26 | 83.49 | |
| | | 0.2350 | 0.0366 | 84.43 | | |
| Meyer All Purpose | Painted Steel | 0.6896 | 0.2864 | 58.47 | | 53.43 |
| | | 0.3672 | 0.1610 | 56.15 | 56.26 | |
| | | 0.9362 | 0.4292 | 54.16 | | |
| | Plastic | 0.6708 | 0.4374 | 34.79 | | |
| | | 0.4205 | 0.1947 | 53.70 | 41.91 | |
| | | 1.0288 | 0.6458 | 37.23 | | |
| | Ceramic | 0.3252 | 0.1231 | 62.15 | | |
| | | 0.3762 | 0.0788 | 79.05 | 62.11 | |
| | | 0.3796 | 0.2083 | 45.13 | | |
| Seventh All Purpose | Painted Steel | 0.6129 | 0.5633 | 8.09 | | 54.35 |
| | | 0.6432 | 0.4778 | 25.72 | 33.00 | |
| | | 0.2955 | 0.1029 | 65.18 | | |
| | Plastic | 0.5848 | 0.1451 | 75.19 | | |
| | | 0.5566 | 0.2561 | 53.99 | 67.93 | |
| | | 0.3685 | 0.0935 | 74.63 | | |
| | Ceramic | 0.1603 | 0.0688 | 57.08 | | |
| | | 0.2917 | 0.0744 | 74.49 | 62.12 | |
| | | 0.1858 | 0.0840 | 54.79 | | |
| DFC General Spray | Painted Steel | 0.6528 | 0.5213 | 20.14 | | 44.39 |
| | | 1.0583 | 0.9114 | 13.88 | 15.01 | |
| | | 0.9087 | 0.8087 | 11.00 | | |
| | Plastic | 0.6796 | 0.6770 | 0.38 | | |
| | | 0.4263 | 0.0996 | 76.64 | 50.20 | |
| | | 0.5838 | 0.1543 | 73.57 | | |
| | Ceramic | 0.2305 | 0.0678 | 70.59 | | |
| | | 0.1595 | 0.0210 | 86.83 | 67.96 | |
| | | 0.4391 | 0.2351 | 46.46 | | |
| DFC Kitchen | Painted Steel | 0.8085 | 0.7164 | 11.39 | | 47.05 |
| | | 0.6122 | 0.4466 | 27.05 | 20.05 | |
| | | 0.9331 | 0.7306 | 21.70 | | |
| | Plastic | 0.3471 | 0.0417 | 87.99 | | |
| | | 0.4372 | 0.0605 | 86.16 | 73.04 | |

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|------------------|---------------|--------|--------|-------|-------|-------|
| | | 0.4118 | 0.2266 | 44.97 | | |
| | Ceramic | 0.2450 | 0.2331 | 4.86 | | |
| | | 0.2466 | 0.1203 | 51.22 | 48.06 | |
| | | 0.1615 | 0.0192 | 88.11 | | |
| Comet | Painted Steel | 0.5219 | 0.4405 | 15.60 | | 44.84 |
| | | 0.4049 | 0.2195 | 45.79 | 23.66 | |
| | | 1.1585 | 1.0474 | 9.59 | | |
| | Plastic | 0.4987 | 0.2451 | 50.85 | | |
| | | 0.3944 | 0.1691 | 57.12 | 62.75 | |
| | | 0.4181 | 0.0825 | 80.27 | | |
| | Ceramic | 0.4627 | 0.3534 | 23.62 | | |
| | | 0.3851 | 0.1555 | 59.62 | 48.11 | |
| | | 0.1344 | 0.0523 | 61.09 | | |
| Meyer Shower | Painted Steel | 0.6836 | 0.4878 | 28.64 | | 50.67 |
| | | 0.8661 | 0.5147 | 40.57 | 33.32 | |
| | | 0.8864 | 0.6138 | 30.75 | | |
| | Plastic | 0.4872 | 0.4273 | 12.29 | | |
| | | 0.4589 | 0.0910 | 80.17 | 63.28 | |
| | | 0.4891 | 0.0128 | 97.38 | | |
| | Ceramic | 0.3623 | 0.2826 | 22.00 | | |
| | | 0.2620 | 0.0837 | 68.05 | 55.40 | |
| | | 0.2955 | 0.0705 | 76.14 | | |
| Seventh Bathroom | Painted Steel | 0.2937 | 0.2195 | 25.26 | | 60.40 |
| | | 0.3137 | 0.0299 | 90.47 | 64.12 | |
| | | 0.5785 | 0.1352 | 76.63 | | |
| | Plastic | 0.2766 | 0.1338 | 51.63 | | |
| | | 0.7681 | 0.0380 | 95.05 | 69.66 | |
| | | 0.7137 | 0.2691 | 62.30 | | |
| | Ceramic | 0.3974 | 0.2989 | 24.79 | | |
| | | 0.1891 | 0.1222 | 35.38 | 47.43 | |
| | | 0.3001 | 0.0536 | 82.14 | | |
| DFC Polish | Painted Steel | 0.5494 | 0.5428 | 1.20 | | 16.00 |
| | | 0.6986 | 0.6153 | 11.92 | 8.77 | |
| | | 0.5838 | 0.5068 | 13.19 | | |
| | Plastic | 0.6641 | 0.4463 | 32.80 | | |
| | | 0.6208 | 0.2722 | 56.15 | 30.25 | |
| | | 0.8604 | 0.8450 | 1.79 | | |
| | Ceramic | 0.4921 | 0.4322 | 12.17 | | |
| | | 0.4234 | 0.3754 | 11.34 | 8.98 | |
| | | 1.0207 | 0.9856 | 3.44 | | |

Summary:

| | | | | | |
|--------------------------------|---------------------------------------|---------------|--------------------|--------------------------|----------------------|
| Substrates: | Ceramics, Plastic, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Clorox Company | Clorox Kitchen Cleaner | 100 | 67.21 | <input type="checkbox"/> | |
| Seventh Generation | Free & Clear Kitchen Cleaner | 100 | 57.36 | <input type="checkbox"/> | |
| Henkel Corporation | Soft Scrub with Bleach | 100 | 53.63 | <input type="checkbox"/> | |
| Clorox Company | Formula 409 All Purpose Cleaner | 100 | 61.52 | <input type="checkbox"/> | |
| Mrs Myers Clean Day | Mrs Meyers Lemon Multisurface Cleaner | 100 | 53.43 | <input type="checkbox"/> | |
| Seventh Generation | Free & Clear All Purpose | 100 | 54.35 | <input type="checkbox"/> | |
| Cogent Environmental Solutions | DFC General Spray | 100 | 44.39 | <input type="checkbox"/> | |

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|--------------------------------|----------------------------------|-----|-------|--------------------------|--|
| Cogent Environmental Solutions | DFC Kitchen Spray | 100 | 47.05 | <input type="checkbox"/> | |
| Prestige Brands Inc | Comet Bathroom Cleaner | 100 | 44.84 | <input type="checkbox"/> | |
| Mrs Myers Clean Day | Mrs Meyers Lavender Tub and Tile | 100 | 50.67 | <input type="checkbox"/> | |
| Seventh Generation | Disinfecting Bathroom Cleaner | 100 | 60.40 | <input type="checkbox"/> | |
| Cogent Environmental Solutions | DFC GPC Polish | 100 | 16.00 | <input type="checkbox"/> | |

Conclusion:

None of the products evaluated were found to be effective. Upon review of the trial, the soil formulation was very old (over 1 year) which may have affected the cleaning performance for the conditions typically used for all purpose cleaning.