

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 11/25/2008
 Experimenters: Jason Marshall, Junhee Cho
 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 for all purpose cleaning

Experimental Procedure: The supplied cleaning product was used at the supplied concentration (20:1). A second product, selected by the lab, was diluted with DI water to vendor recommended dilution (128:1) for all purpose cleaning. Prew weighed ceramic 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. A Kimberly Clark 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 solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, and efficiencies were calculated and recorded.

Results: Both the supplied product and industry product were effective in removing the Hucker's Soil with a manual wiping action. The table lists the amount of soil initially added and the amount remaining after cleaning and the product efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|--------------------|------------|----------|-----------|
| H2O2-ceramic | 0.2179 | 0.0650 | 70.17 |
| | 0.4540 | 0.0973 | 78.57 |
| | 0.0278 | 0.0018 | 93.53 |
| H2O2-steel | 0.2052 | 0.0360 | 82.46 |
| | 0.3800 | 0.0394 | 89.63 |
| | 0.2654 | 0.0342 | 87.11 |
| H2O2-plastic | 0.4010 | 0.0095 | 97.63 |
| | 0.3011 | 0.0236 | 92.16 |
| | 0.3396 | 0.0233 | 93.14 |
| Heavy Duty-ceramic | 0.5248 | 0.0855 | 83.71 |
| | 0.3788 | 0.0348 | 90.81 |
| | 0.4649 | 0.0980 | 78.92 |
| Heavy Duty-steel | 0.4396 | 0.0558 | 87.31 |
| | 0.3631 | 0.0432 | 88.10 |
| | 0.1365 | 0.0534 | 60.88 |
| Heavy Duty-plastic | 0.3503 | 0.0117 | 96.66 |
| | 0.1709 | 0.0201 | 88.24 |
| | 0.3491 | 0.0167 | 95.22 |

Summary:

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|----------------------|-------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Plastic, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Cleanline Products | H2O2 Super Citrus Concentrate | 4 | 87.16 | <input checked="" type="checkbox"/> | |

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|--------------------------|---|---|-------|-------------------------------------|--|
| The Clean Environment Co | Natural N-14 Heavy Duty Degreaser and Cleaner | 2 | 85.54 | <input checked="" type="checkbox"/> | |
|--------------------------|---|---|-------|-------------------------------------|--|

Conclusion: The supplied product had an overall average efficiency greater than 85% and would be considered effective based on the SSL testing methodology.