

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006

DateRun: 03/10/2006

Experimenters: Jason Marshall

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 application

Experimental Procedure: The supplied cleaning products were diluted with DI water to vendor recommended concentration for all purpose cleaning (3.156 and 1.56%). Water was also used. Prewieghed ceramic, plastic G-10 and painted 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 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 Professional Painter's Rag 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 two supplied products removed over 85% of the Hucker's soil. The table below list the amount of soil added, the amount reaming and the efficiency for each substrate.

| Cleaner | Initial wt | Final wt | % Removed |
|--------------------|------------|----------|-----------|
| Perma 180 Ceramic | 0.4392 | 0.1015 | 76.89 |
| | 0.2328 | 0.0552 | 76.29 |
| | 0.1891 | 0.0532 | 71.87 |
| Perma 1040 Ceramic | 0.2918 | 0.0726 | 75.12 |
| | 0.2849 | 0.0990 | 65.25 |
| | 0.3980 | 0.1108 | 72.16 |
| Water Ceramic | 0.4808 | 0.2625 | 45.40 |
| | 0.7266 | 0.2852 | 60.75 |
| | 0.2941 | 0.1590 | 45.94 |
| Perma 180 Plastic | 0.2726 | 0.0061 | 97.76 |
| | 0.6373 | 0.0060 | 99.06 |
| | 0.3019 | 0.0040 | 98.68 |
| Perma 1040 Plastic | 0.3735 | 0.0045 | 98.80 |
| | 0.3150 | 0.0134 | 95.75 |
| | 0.2924 | 0.0113 | 96.14 |
| Water Plastic | 0.4390 | 0.0505 | 88.50 |
| | 0.4479 | 0.0593 | 86.76 |
| | 0.4891 | 0.0567 | 88.41 |
| Perma 180 Steel | 0.3693 | 0.0397 | 89.25 |
| | 0.4073 | 0.0223 | 94.52 |
| | 0.4835 | 0.0176 | 96.36 |
| Perma 1040 Steel | 0.5734 | 0.0879 | 84.67 |
| | 0.5301 | 0.0258 | 95.13 |
| | 0.2885 | 0.0419 | 85.48 |
| Water Steel | 0.4182 | 0.0668 | 84.03 |

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| | 0.3262 | 0.0610 | 81.30 |
| | 0.2627 | 0.0677 | 74.23 |

Summary:

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|----------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Plastic, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Perma Inc | Geo Clean 180 | 3.156 | 88.96 | <input checked="" type="checkbox"/> | |
| Perma Inc | Easy Mix Foaming Restroom Cleaner #1040 | 1.56 | 85.39 | <input checked="" type="checkbox"/> | |
| Water | Water | 100 | 72.81 | <input type="checkbox"/> | |

Conclusion:

Both Geo Clean 180 and Easy Mix 1040 removed over 85% of the Hucker's at the suggested concentrations.