

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2013

DateRun: 05/22/2013

Experimenters: Digvijay Devkota

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 the efficiency of Simple green and Super green cleaners in hucker soil from ceramics, plastics and painted steel coupons.

Experimental Procedure: Prew weighed ceramic, plastic G-10 and painted steel 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, Shaws saline solution) 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 in a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 4-6 sprays of cleaning solutions. Each coupon was sprayed 3-5 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33seconds). At the end of the cleaning; bottom part of the coupons were wiped once with a dry paper towel. Final weights were measured, efficiencies were calculated and recorded.

Results: Both products were effective at removing the Hucker's soil from the three surfaces using manual wiping. There were no statistical difference in the removal rates for both products, each removing more than 92% of the Hucker's soil. 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 |
|--|------------|----------|-----------|
| SimpleGreen_Ceramics_HuckerSoil_05_28_13 | | | |
| | 0.1485 | 0.0013 | 99.12 |
| | 0.1141 | 0.0177 | 84.49 |
| | 0.0981 | 0.0078 | 92.05 |
| SimpleGreen_Plastics_HuckerSoil_05_28_13 | | | |
| | 0.0833 | 0.0122 | 85.35 |
| | 0.1321 | 0.0056 | 95.76 |
| | 0.1067 | 0.0112 | 89.50 |
| SimpleGreen_PaintedSteel_HuckerSoil_05_28_13 | | | |
| | 0.0483 | 0.0026 | 94.62 |
| | 0.0720 | 0.0026 | 96.39 |
| | 0.0491 | 0.0031 | 93.69 |
| SuperGreen_Ceramics_Huckersoil_05_28_13 | | | |
| | 0.0789 | 0.0055 | 93.03 |
| | 0.0821 | 0.0046 | 94.40 |
| | 0.0705 | 0.0056 | 92.06 |
| SuperGreen_Plastics_Huckersoil_05_28_13 | | | |
| | 0.0639 | 0.0052 | 91.86 |
| | 0.0755 | 0.0027 | 96.42 |
| | 0.0784 | 0.0041 | 94.77 |
| SuperGreen_PaintedSteel_Huckersoil_05_28_13 | | | |
| | 0.0516 | 0.0039 | 92.44 |
| | 0.0663 | 0.0035 | 94.72 |
| | 0.0363 | 0.0078 | 78.51 |

Summary:

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|----------------------|--------------------------|
| Substrates: | Ceramics, Plastic, Steel |
| Contaminants: | Hucker's Soil |

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| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|--------------------------------|---|--------|-------------|-------------------------------------|---------------|
| Simple Green | Crystal Simple Green Industrial Cleaner & Degreaser | 9.1 | 92.33 | <input checked="" type="checkbox"/> | |
| NuGeneration Technologies, LLC | Super Green Multipurpose Cleaner & Degreaser | 9.1 | 92.02 | <input checked="" type="checkbox"/> | |

Conclusion:

The supplied cleaning products were success on removing the soils from the surface of Ceramics, Plastics and Painted Steel.