

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014

DateRun: 04/28/2014

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: The purpose of this test is to check whether the cleaners Artik, Fabuloso, and Formula 409 All Purpose Cleaner are effective in removing Huckers Soil from the surface of the Plastics, Painted Steel and Ceramic coupons or not.

Experimental Procedure: 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 recorded, efficiencies were calculated and recorded.

Results: The Huckers Soil was already made and was soiled in the surface of the coupons. Coupons were left for 2-3 hours to dry. Dirty weight was recorded and the coupons were cleaned using manual wipe and left overnight to dry. After cleaning, the weight was recorded and was calculated.

All of the three cleaners were effective after the first round of cleaning. The percent removal was on the effective range. If looking at the average after cleaning, Artik was more effective in Plastics then Painted Steel and Ceramic. Fabuloso was effective in all the coupons but little less effective in Ceramics compared to Plastics and Painted Steel. Similarly, Formula 409 All Purpose Cleaner was more effective in Plastics and Painted Steel compared to Ceramic but for all three types of coupons they are below the range of 80 percent.

The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for soil used.

| Cleaner | Initial wt | Final wt | % Removed |
|------------------------------------|------------|----------|-----------|
| Artik_Plastics_Hucker'sSoil | | | |
| | 0.4860 | 0.0570 | 88.27 |
| | 0.3886 | 0.0846 | 78.23 |
| | 0.3918 | 0.0328 | 91.63 |
| Artik_PaintedSteel_Hucker'sSoil | | | |
| | 0.1977 | 0.0418 | 78.86 |
| | 0.3913 | 0.0572 | 85.38 |
| | 0.2100 | 0.1134 | 46.00 |
| Artik_Ceramics_Hucker'sSoil | | | |
| | 0.6091 | 0.2709 | 55.52 |
| | 0.4624 | 0.3272 | 29.24 |
| | 0.3078 | 0.1517 | 50.71 |
| Fabuloso_Plastics_Hucker'sSoil | | | |
| | 0.1983 | 0.0083 | 95.81 |
| | 0.1734 | 0.0076 | 95.62 |
| | 0.3870 | 0.0167 | 95.68 |
| Fabuloso_PaintedSteel_Hucker'sSoil | | | |
| | 0.2107 | 0.0330 | 84.34 |
| | 0.2498 | 0.0263 | 89.47 |
| | 0.4062 | 0.0728 | 82.08 |
| Fabuloso_Ceramics_Hucker'sSoil | | | |
| | 0.3669 | 0.0875 | 76.15 |
| | 0.3582 | 0.1149 | 67.92 |
| | 0.3830 | 0.0859 | 77.57 |

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|--------------------------------------|--------|--------|-------|
| Formula409_Plastics_Hucker'sSoil | | | |
| | 0.3715 | 0.1023 | 72.46 |
| | 0.2791 | 0.1160 | 58.44 |
| | 0.2089 | 0.0048 | 97.70 |
| Formula409_PaintedSteel_Hucker'sSoil | | | |
| | 0.2495 | 0.0369 | 85.21 |
| | 0.1559 | 0.0224 | 85.63 |
| | 0.2809 | 0.1433 | 48.99 |
| Formula409_Ceramics_Hucker'sSoil | | | |
| | 0.2748 | 0.1313 | 52.22 |
| | 0.4087 | 0.2036 | 50.18 |
| | 0.2608 | 0.1165 | 55.33 |

Summary:

| | | | | | |
|---------------------------|---------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Plastic, Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Oresch | Artik All Purpose Cleaner | 100 | 83.97 | <input checked="" type="checkbox"/> | |
| Clorox Company | Formula 409 All Purpose Cleaner | 100 | 87.69 | <input checked="" type="checkbox"/> | |
| Colgate-Palmolive Company | Fabuloso | 100 | 84.02 | <input checked="" type="checkbox"/> | |

Conclusion:

Similarly, Formula 409 All Purpose Cleaner was not effective at all on all three surfaces of the coupons. The overall performance of Artik was comparable to the Formula 409 product.