

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2015

DateRun: 02/12/2015

Experimenters: Loc Nguyen, Nicholas Landberg

ClientType: Cleaner Manufacturer

ProjectNumber: Project #4

Substrates: Ceramics, Plastic, White Board

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for all purpose cleaning following GS 37 requirements

Experimental Procedure: Three sets of nine ceramic, stainless steel, and polycarbonate coupons were weighed and then coated with the 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%, saline solution 2.7%) using a handheld swab and allowed to dry for 2 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 Wypal x60 reinforced paper towel was attached to the cleaning sled and soaked with 1 spray of cleaning solution. Each coupon was sprayed 1 time with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). Final weights were recorded, efficiencies were calculated and recorded.

Results:

| Cleaner | Initial wt | Final wt | % Removed |
|--------------------------------|------------|----------|-----------|
| NFMRP 2V 1:128 - Ceramic | | | |
| | 0.5016 | 0.0489 | 90.25 |
| | 0.5172 | 0.0121 | 97.66 |
| | 0.5055 | 0.0907 | 82.06 |
| NFMRP 2V 1:128 - Plastic | | | |
| | 0.4934 | 0.2565 | 48.01 |
| | 0.5096 | 0.0294 | 94.23 |
| | 0.5300 | 0.0242 | 95.43 |
| NFMRP 2V 1:128 - Painted Steel | | | |
| | 0.6084 | 0.0542 | 91.09 |
| | 0.5263 | 0.1335 | 74.63 |
| | 0.5058 | 0.1132 | 77.62 |
| NFMRP 2V 1:64 - Ceramic | | | |
| | 0.4868 | 0.2281 | 53.14 |
| | 0.5304 | 0.0960 | 81.90 |
| | 0.4955 | 0.0730 | 85.27 |
| NFMRP 2V 1:64 - Plastic | | | |
| | 0.4302 | 0.0024 | 99.44 |
| | 0.5311 | 0.0166 | 96.87 |
| | 0.4997 | 0.0260 | 94.80 |
| NFMRP 2V 1:64 - Painted Steel | | | |
| | 0.5100 | 0.0538 | 89.45 |
| | 0.5001 | 0.0385 | 92.30 |
| | 0.5013 | 0.1941 | 61.28 |
| 7th Generation - Ceramic | | | |
| | 0.4811 | 0.0813 | 83.10 |

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|--------------------------------|--------|--------|-------|
| | 0.5314 | 0.0676 | 87.28 |
| | 0.5054 | 0.0563 | 88.86 |
| 7th Generation - Plastic | | | |
| | 0.4530 | 0.0068 | 98.50 |
| | 0.4874 | 0.0032 | 99.34 |
| | 0.5124 | 0.0042 | 99.18 |
| 7th Generation - Painted Steel | | | |
| | 0.4904 | 0.0447 | 90.88 |
| | 0.5296 | 0.0504 | 90.48 |
| | 0.4867 | 0.0329 | 93.24 |
| 409 -Ceramic | | | |
| | 0.4572 | 0.0817 | 82.13 |
| | 0.5775 | 0.0428 | 92.59 |
| | 0.5718 | 0.0436 | 92.37 |
| 409 - Plastic | | | |
| | 0.5184 | 0.0124 | 97.61 |
| | 0.4525 | 0.0105 | 97.68 |
| | 0.4993 | 0.0410 | 91.79 |
| 409 - Painted Steel | | | |
| | 0.4873 | 0.0956 | 80.38 |
| | 0.5106 | 0.0292 | 94.28 |
| | 0.5134 | 0.0393 | 92.35 |

Summary:

| | | | | | |
|-----------------------|---------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics, Plastic, White Board | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| ProNatural Brands LLC | NFMRP 2V | 0.8 | 83.45 | <input checked="" type="checkbox"/> | |
| ProNatural Brands LLC | NFMRP 2V | 1.6 | 83.83 | <input checked="" type="checkbox"/> | |
| Seventh Generation | Free & Clear All Purpose | 100 | 92.32 | <input checked="" type="checkbox"/> | |
| Clorox Company | Formula 409 All Purpose Cleaner | 100 | 91.24 | <input checked="" type="checkbox"/> | |

Conclusion:

The 1:64 dilution of NFMRP exhibited an effective level of cleaning for plastic, while the 1:128 dilution was effective on ceramic. The 409 and 7th Generation products exhibited effective cleaning for each surface.