

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 02/19/2020

Experimenters: Aditi Patel, Hannah Ritchie

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Plastic, Chrome, Painted metal

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of Culleoka Natural Based Cleaner to comparative products at removing Hucker's soil from various substrates

Experimental Procedure: Sixty-three pre-weighed coupons, three per substrate for each cleaner, was contaminated with 0.05 grams of Hucker's soil (Evaporated Milk; 26.5%, Creamy Peanut Butter; 17%, Salted Butter; 17%, Stone Ground Wheat Flour; 17%, Linseed Oil; 2.25%, Saline Solution; 5.25%, India Ink; 6.8%, Lemon Juice; 8.2%) for each coupon. Coupons aged for two hours at room temperature (68°F) before dirty weights were recorded. Coupons of the same substrate were placed into the Straight-Line Washability (SLW) unit, three at a time, and treated once with the cleaner. A Wypall was attached to the SLW sled and treated twice with the cleaner. Each test ran 20 cycles (~30 seconds of cleaning). Coupons air-dried at room temperature (68°F) for one hour before final weights were recorded.

| Results: | Cleaner | Substrate | Initial wt. of Cont. | Final wt. Cont. | % Cont. Removed | Average% Removal | Overall % Removal |
|----------|---------|-----------|----------------------------|-----------------------|--------------------|---------------------|-------------------------|
| | A | 1 | 0.2190 | 0.0229 | 89.54 | 89.52 | 92.53 |
| | | | 0.1066 | 0.0107 | 89.96 | | |
| | | | 0.1104 | 0.0121 | 89.04 | | |
| | | 2 | 0.0803 | 0.0072 | 91.03 | 93.34 | |
| | | | 0.0778 | 0.0056 | 92.80 | | |
| | | | 0.2465 | 0.0094 | 96.19 | | |
| | | 3 | 0.4392 | 0.0416 | 90.53 | 94.75 | |
| | | | 0.4410 | 0.0116 | 97.37 | | |
| | | | 0.3994 | 0.0146 | 96.34 | | |
| | B | 1 | 0.1298 | 0.0429 | 66.95 | 67.23 | 77.92 |
| | | | 0.2037 | 0.0844 | 58.57 | | |
| | | | 0.1175 | 0.0280 | 76.17 | | |
| | | 2 | 0.1128 | 0.0187 | 83.42 | 74.52 | |
| | | | 0.0805 | 0.0246 | 69.44 | | |
| | | | 0.1775 | 0.0520 | 70.70 | | |
| | | 3 | 0.4349 | 0.0324 | 92.55 | 92.00 | |
| | | | 0.4696 | 0.0336 | 92.84 | | |
| | | | 0.4364 | 0.0410 | 90.60 | | |
| C | 1 | 0.1203 | 0.0257 | 78.64 | 81.53 | 79.77 | |
| | | 0.2397 | 0.0223 | 90.70 | | | |
| | | 0.1548 | 0.0383 | 75.26 | | | |
| | 2 | 0.2296 | 0.1044 | 54.53 | 64.87 | | |
| | | 0.1529 | 0.0442 | 71.09 | | | |
| | | 0.2461 | 0.0763 | 69.00 | | | |
| | 3 | 0.4698 | 0.0242 | 94.85 | 92.92 | | |
| | | 0.4522 | 0.0140 | 96.90 | | | |
| | | 0.4870 | 0.0633 | 87.00 | | | |
| D | 1 | 0.6981 | 0.0746 | 89.31 | 84.94 | 91.53 | |
| | | 0.6619 | 0.1012 | 84.71 | | | |
| | | 0.4717 | 0.0906 | 80.79 | | | |
| | 2 | 0.4060 | 0.0238 | 94.14 | 92.68 | | |
| | | | | | | | |

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|---|---|--------|---------|--------|-------|-------|
| | | 0.3994 | 0.0434 | 89.13 | | |
| | | 0.4867 | 0.0255 | 94.76 | | |
| | 3 | 0.3815 | 0.0133 | 96.51 | 96.97 | |
| | | 0.4094 | 0.0117 | 97.14 | | |
| | | 0.3469 | 0.0095 | 97.26 | | |
| E | 1 | 0.4101 | 0.0176 | 95.71 | 95.75 | 88.89 |
| | | 0.6144 | 0.1083 | 82.37 | | |
| | | 0.3679 | -0.0337 | 109.16 | | |
| | 2 | 0.3491 | 0.0834 | 76.11 | 74.39 | |
| | | 0.2846 | 0.0962 | 66.20 | | |
| | | 0.4472 | 0.0856 | 80.86 | | |
| | 3 | 0.3860 | 0.0102 | 97.36 | 96.52 | |
| | | 0.3995 | 0.0108 | 97.30 | | |
| | | 0.3834 | 0.0195 | 94.91 | | |
| F | 1 | 0.4972 | 0.0356 | 92.84 | 92.51 | 88.24 |
| | | 0.6377 | 0.0529 | 91.70 | | |
| | | 0.4298 | 0.0301 | 93.00 | | |
| | 2 | 0.6216 | 0.0618 | 90.06 | 75.43 | |
| | | 0.3776 | 0.0973 | 74.23 | | |
| | | 0.2950 | 0.1121 | 62.00 | | |
| | 3 | 0.3893 | 0.0110 | 97.17 | 96.79 | |
| | | 0.4357 | 0.0145 | 96.67 | | |
| | | 0.4025 | 0.0140 | 96.52 | | |

Summary:

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|-------------------------|---|--------------------------------|--------------------|-------------------------------------|----------------------|--|
| Substrates: | | Plastic, Chrome, Painted metal | | | | |
| Contaminants: | | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| Culleoka Co | Culleoka Natural Based Cleaner | 100 | 92.53 | <input checked="" type="checkbox"/> | | |
| Method | Method All-Purpose Cleaner | 100 | 77.92 | <input type="checkbox"/> | | |
| Seventh Generation | All Purpose Morning Meadow | 100 | 79.71 | <input type="checkbox"/> | | |
| Clorox Company | Green Works Multi-Surface Cleaner | 100 | 91.53 | <input checked="" type="checkbox"/> | | |
| Mrs Myers Clean Day | Mrs Meyers Lemon Multisurface Cleaner | 100 | 88.89 | <input checked="" type="checkbox"/> | | |
| Annie's Pure and Simple | Annie's Pure and Simple All Purpose Cleaner - Pink Grapefruit | 100 | 88.24 | <input checked="" type="checkbox"/> | | |

Conclusion:

Culleoka Natural Based Cleaner was the most effective cleaner at removing Hucker's Soil from ceramic, plastic, and painted metal.