

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2022

DateRun: 07/14/2022

Experimenters: Zoe Lawson, Tatyanna Moreland Junior, Alexander Symko

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Painted metal

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the effectiveness of three different Ascend formulations (Ware-washing, All Purpose TM09, and Hard Surface) with three different main ingredient variations (EDTA, DS IDA, and NTA) with All Purpose Testing.

Experimental Procedure: The following experiment conducted was the All Purpose TM09 formulation with EDTA, DS IDA, and NTA. The formulation consisted of 0.56 parts Citric Acid, 24 parts Glucapon 420, 5 parts (EDTA/DS IDA/NTA), and 70.44 parts water. Nine pre-weighed coupons, three of each substrate per cleaner, were soiled with Hucker's Soil Formulation (Jiff 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%) that was distributed onto each coupon using a swab. Dirty weights were recorded after the coupons had dried for two hours at room temperature (68° F). Three coupons of the same substrate were aligned into a Single Line Washing Unit (SLW) with Wypall X60 attached to the cleaning sled. The Wypall X60 reinforced wipe along with the coupons were all sprayed three times with the cleaner and then allowed to soak for 30 seconds. Afterwards the SLW was activated and the coupons were cleaned for 20 cycles. Cleaned coupons dried overnight at room temperature before the final weights were recorded.

Results: Table 1: All Purpose TM09 Results

| Product | Substrate | Initial wt of cont. | Final wt of cont. | % Cont Removed | Average | Overall Average |
|---------|------------------|---------------------------|-------------------------|-------------------|---------|--------------------|
| EDTA | Ceramic | 0.0993 | 0.0173 | 82.58 | 83.10 | 86.53 |
| | | 0.0840 | 0.0150 | 82.14 | | |
| | | 0.1129 | 0.0174 | 84.59 | | |
| | Painted Metal | 0.1639 | 0.0185 | 88.71 | 87.93 | |
| | | 0.1100 | 0.0156 | 85.82 | | |
| | | 0.1646 | 0.0177 | 89.25 | | |
| | Plastic | 0.2329 | 0.0159 | 93.17 | 88.56 | |
| | | 0.1468 | 0.0225 | 84.67 | | |
| | | 0.1613 | 0.0196 | 87.85 | | |
| DS IDA | Ceramic | 0.1108 | 0.0207 | 81.32 | 84.17 | 86.90 |
| | | 0.1431 | 0.0176 | 87.70 | | |
| | | 0.1846 | 0.0305 | 83.48 | | |
| | Painted Metal | 0.1585 | 0.0331 | 79.12 | 82.29 | |
| | | 0.2616 | 0.0411 | 84.29 | | |
| | | 0.2475 | 0.0409 | 83.47 | | |
| | Plastic | 0.1658 | 0.0118 | 92.88 | 94.26 | |
| | | 0.2326 | 0.0076 | 96.73 | | |
| | | 0.1781 | 0.0122 | 93.15 | | |
| NTA | Ceramic | 0.1961 | 0.0186 | 90.52 | 92.07 | 89.71 |
| | | 0.2249 | 0.0141 | 93.73 | | |
| | | 0.1853 | 0.0149 | 91.96 | | |
| | Painted Metal | 0.2266 | 0.0474 | 79.08 | 85.65 | |
| | | 0.2107 | 0.0278 | 86.81 | | |
| | | 0.1890 | 0.0169 | 91.06 | | |
| | Plastic | 0.2947 | 0.0228 | 92.26 | 91.40 | |
| | | 0.2901 | 0.0252 | 91.31 | | |

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| | | 0.2529 | 0.0237 | 90.63 | | |
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Summary:

Conclusion: The overall average removal results of the TM09 All Purpose formulation were all consistently close to 90% removal. NTA was slightly more effective than EDTA and DS IDA at 89% overall average removal. The effectiveness of the TM09 All Purpose formulation is promising with its high removal yields.