

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2011

DateRun: 05/26/2011

Experimenters: Jason Marshall, Junhee Cho, Johnny Le

ClientType: General

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Steel

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate three supplied products for all purpose cleaning as part of three part experiment to evaluate product at one concentration for multiple cleaning tasks.

Experimental Procedure: Ceramic, Painted steel, and polycarbonate coupons were weighed and then coated with Hucker's Soil Formulation (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. All three cleaners were diluted at 2.4 %.

Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.

Results: All products were effective at removing more than 85% of the Hucker's soil from two of the surfaces (painted steel and polycarbonate) using manual wiping. However, MD Stetson PC 220 and RMC DFE 401 were not effective at removing the Hucker's soil on ceramic surface. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each of the ceramic, painted steel and polycarbonate coupons cleaned.

| Cleaner                         | Initial wt | Final wt | % Removed |
|---------------------------------|------------|----------|-----------|
| MD Stetson PC 220_ceramic       |            |          |           |
|                                 | 0.3867     | 0.0696   | 82.00     |
|                                 | 0.4443     | 0.1045   | 76.48     |
|                                 | 0.3469     | 0.1057   | 69.53     |
| MD Stetson PC 220_Painted steel |            |          |           |
|                                 | 0.0613     | 0.0033   | 94.62     |
|                                 | 0.0348     | 0.0014   | 95.98     |
|                                 | 0.0375     | 0.0024   | 93.60     |
| MD Stetson PC 220_polycarb      |            |          |           |
|                                 | 0.3455     | 0.0466   | 86.51     |
|                                 | 0.2351     | 0.0402   | 82.90     |
|                                 | 0.3404     | 0.0927   | 72.77     |
| RMC DFE 401_ceramic             |            |          |           |
|                                 | 0.1733     | 0.0675   | 61.05     |
|                                 | 0.1067     | 0.0458   | 57.08     |
|                                 | 0.1026     | 0.0445   | 56.63     |
| RMC DFE 401_Painted steel       |            |          |           |
|                                 | 0.0504     | 0.0045   | 91.07     |
|                                 | 0.0628     | 0.0030   | 95.22     |
|                                 | 0.0618     | 0.0038   | 93.85     |
| RMC DFE 401_polycarb            |            |          |           |
|                                 | 0.0799     | 0.0279   | 65.08     |
|                                 | 0.2251     | 0.0165   | 92.67     |
|                                 | 0.3645     | 0.0280   | 92.32     |
| MD Stetson PC 101_ceramic       |            |          |           |
|                                 | 0.1939     | 0.0203   | 89.53     |
|                                 | 0.1160     | 0.0013   | 98.88     |

# CLEANING LABORATORY EVALUATION SUMMARY

|                                 |        |        |       |
|---------------------------------|--------|--------|-------|
|                                 | 0.0839 | 0.0056 | 93.33 |
| MD Stetson PC 101_Painted steel |        |        |       |
|                                 | 0.0593 | 0.0031 | 94.77 |
|                                 | 0.0892 | 0.0026 | 97.09 |
|                                 | 0.0591 | 0.0031 | 94.75 |
| MD Stetson PC 101_polycarb      |        |        |       |
|                                 | 0.0399 | 0.0086 | 78.45 |
|                                 | 0.0719 | 0.0073 | 89.85 |
|                                 | 0.0440 | 0.0026 | 94.09 |

Summary:

|                               |                                      |               |                    |                                     |                      |
|-------------------------------|--------------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>            | Ceramics, Plastic, Steel             |               |                    |                                     |                      |
| <b>Contaminants:</b>          | Hucker's Soil                        |               |                    |                                     |                      |
| <b>Company Name:</b>          | <b>Product Name:</b>                 | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Next-Gen Supply Group         | PC 101 Neutral and Glass Cleaner     | 2.4           | 92.30              | <input checked="" type="checkbox"/> |                      |
| Next-Gen Supply Group         | PC 220 Peroxide Multipurpose Cleaner | 2.4           | 83.82              | <input type="checkbox"/>            |                      |
| Rochester Midland Corporation | DFE 401                              | 2.4           | 78.33              | <input type="checkbox"/>            |                      |

Conclusion:

MD Stetson PC 101 cleaner was effective to remove the Hucker's soil on various types of surfaces. Next step will be to evaluate products at the same concentration for bathroom cleaning.