

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2015

DateRun: 01/06/2015

Experimenters: Loc Nguyen, George Liang

ClientType: Cleaner Manufacturer

ProjectNumber: Project #2

Substrates: Ceramics

PartType: Coupon

Contaminants: Greases, Food

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate supplied product for grease removal from floor surfaces following CSPA DCC 17

Experimental Procedure: Floor cleaning for the supplied product was tested using the CSPA DCC 17 - Greasy Soil Test Method for Evaluating Spray-and-Wipe Cleaners Used On Hard, Non-Glossy Surfaces standard. A few minor deviations from the standard were incorporated into the test conducted. The Greasy Soil Test Method is a standard method that evaluates the cleaning performance of products intended for use on washable walls or other hard, non-glossy surfaces. This method provides instructions for soil application, cleaning and evaluation of spray-and-wipe cleaners under controlled cleaning conditions. This method can be used to assess product performance for cleaning a fabricated greasy soil blend applied to painted wallboard tiles. It is not inclusive of all soil or substrates typically encountered by a consumer while using these products.

Soil Preparation  
A mixture of three cooking oils/greases was made. A melt blend of 33% vegetable shortening, 33% lard, 33% vegetable oil and 1% carbon lampblack was made up fresh for the testing. Care was taken in the application of the soil onto the coupons so that light and heavy areas were avoided. Allow the soiled tiles to dry for 24 hours at room temperature. The dirty weights were then taken before running.

Cleaning Test  
Place a soiled tile in the tray of the abrasion tester such that the direction of the soiling is perpendicular to the direction of the sponge. In place of using a sponge and pouring solution into dish for application, products were applied to the coated surfaces using a 1 spray from manual spray pump and 1 spray onto the reinforced Wypal X60 paper towel attached to the cleaning instrument. The cleaning was performed using Gardner Straightline washability unit and conducted for the prescribed 20 cycles. The coupons were allowed to sit and dry, then the clean weights were taken.

Visual Test  
After cleaning, each coupon was examined by the lab and ranked in terms of what was thought to look cleanest. The scale range used is from 0 to 100, where 100 is the highest level of cleaning and 0 is the lowest level.

Chemistries Evaluated: 1166-150-A, 1166-150-B, 1166-150-C, 1166-150-D, 1166-150-E, 1166-150-F2

## Results: Cycle 1 (4 Wipes)

| Cleaner            | Initial wt | Final wt | % Removed |       |
|--------------------|------------|----------|-----------|-------|
| 1166-150-A Ceramic | 1.0935     | 0.2515   | 77.00     | 68.62 |
| 1166-150-A Ceramic | 1.0180     | 0.3863   | 62.05     |       |
| 1166-150-A Ceramic | 1.0477     | 0.3478   | 66.80     |       |
|                    |            |          |           |       |
| 1166-150-B Ceramic | 1.0701     | 0.2596   | 75.74     | 71.39 |
| 1166-150-B Ceramic | 1.0760     | 0.3342   | 68.94     |       |
| 1166-150-B Ceramic | 1.0547     | 0.3219   | 69.48     |       |
|                    |            |          |           |       |
| 1166-150-C Ceramic | 1.0034     | 0.2122   | 78.85     | 71.47 |
| 1166-150-C Ceramic | 1.0789     | 0.2585   | 76.04     |       |

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|                        |        |        |       |       |
|------------------------|--------|--------|-------|-------|
| 1166-150-C<br>Ceramic  | 1.0466 | 0.4237 | 59.52 |       |
| 1166-150-D<br>Ceramic  | 0.9941 | 0.1508 | 84.83 | 71.36 |
| 1166-150-D<br>Ceramic  | 1.0189 | 0.3706 | 63.63 |       |
| 1166-150-D<br>Ceramic  | 1.0344 | 0.3557 | 65.61 |       |
| 1166-150-E<br>Ceramic  | 1.0281 | 0.1125 | 89.06 | 75.46 |
| 1166-150-E<br>Ceramic  | 1.0328 | 0.3137 | 69.63 |       |
| 1166-150-E<br>Ceramic  | 1.0573 | 0.3415 | 67.70 |       |
| 1166-150-F2<br>Ceramic | 1.054  | 0.2254 | 78.61 | 66.81 |
| 1166-150-F2<br>Ceramic | 1.0137 | 0.4520 | 55.41 |       |
| 1166-150-F2<br>Ceramic | 1.0334 | 0.3471 | 66.41 |       |

### Cycle 2 (8 Wipes)

| Cleaner                | Initial<br>wt | Final<br>wt | %<br>Removed |       |
|------------------------|---------------|-------------|--------------|-------|
| 1166-150-A<br>Ceramic  | 1.0935        | 0.0504      | 95.39        | 89.66 |
| 1166-150-A<br>Ceramic  | 1.0180        | 0.0864      | 91.51        |       |
| 1166-150-A<br>Ceramic  | 1.0477        | 0.1876      | 82.09        |       |
| 1166-150-B<br>Ceramic  | 1.0701        | 0.0944      | 91.18        | 90.12 |
| 1166-150-B<br>Ceramic  | 1.0760        | 0.1098      | 89.80        |       |
| 1166-150-B<br>Ceramic  | 1.0547        | 0.1121      | 89.37        |       |
| 1166-150-C<br>Ceramic  | 1.0034        | 0.0680      | 93.22        | 89.94 |
| 1166-150-C<br>Ceramic  | 1.0789        | 0.0807      | 92.52        |       |
| 1166-150-C<br>Ceramic  | 1.0466        | 0.1667      | 84.07        |       |
| 1166-150-D<br>Ceramic  | 0.9941        | 0.0891      | 91.04        | 87.73 |
| 1166-150-D<br>Ceramic  | 1.0189        | 0.1639      | 83.91        |       |
| 1166-150-D<br>Ceramic  | 1.0344        | 0.1218      | 88.23        |       |
| 1166-150-E<br>Ceramic  | 1.0281        | 0.0501      | 95.13        | 92.40 |
| 1166-150-E<br>Ceramic  | 1.0328        | 0.0977      | 90.54        |       |
| 1166-150-E<br>Ceramic  | 1.0573        | 0.0896      | 91.53        |       |
| 1166-150-F2<br>Ceramic | 1.0540        | 0.0664      | 93.70        | 89.30 |

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|                        |        |        |       |  |
|------------------------|--------|--------|-------|--|
| 1166-150-F2<br>Ceramic | 1.0137 | 0.1407 | 86.12 |  |
| 1166-150-F2<br>Ceramic | 1.0334 | 0.1231 | 88.09 |  |

### Cycle 3 (12 Wipes)

| Cleaner                | Initial<br>wt | Final<br>wt | %<br>Removed |       |
|------------------------|---------------|-------------|--------------|-------|
| 1166-150-A<br>Ceramic  | 1.0935        | 0.0321      | 97.06        | 93.57 |
| 1166-150-A<br>Ceramic  | 1.0180        | 0.0673      | 93.39        |       |
| 1166-150-A<br>Ceramic  | 1.0477        | 0.1020      | 90.26        |       |
|                        |               |             |              |       |
| 1166-150-B<br>Ceramic  | 1.0701        | 0.0752      | 92.97        | 93.65 |
| 1166-150-B<br>Ceramic  | 1.0760        | 0.0560      | 94.80        |       |
| 1166-150-B<br>Ceramic  | 1.0547        | 0.0719      | 93.18        |       |
|                        |               |             |              |       |
| 1166-150-C<br>Ceramic  | 1.0034        | 0.0523      | 94.79        | 93.07 |
| 1166-150-C<br>Ceramic  | 1.0789        | 0.0460      | 95.74        |       |
| 1166-150-C<br>Ceramic  | 1.0466        | 0.1185      | 88.68        |       |
|                        |               |             |              |       |
| 1166-150-D<br>Ceramic  | 0.9941        | 0.0372      | 96.26        | 94.59 |
| 1166-150-D<br>Ceramic  | 1.0189        | 0.0601      | 94.1         |       |
| 1166-150-D<br>Ceramic  | 1.0344        | 0.0682      | 93.41        |       |
|                        |               |             |              |       |
| 1166-150-E<br>Ceramic  | 1.0281        | 0.0312      | 96.97        | 94.76 |
| 1166-150-E<br>Ceramic  | 1.0328        | 0.0614      | 94.05        |       |
| 1166-150-E<br>Ceramic  | 1.0573        | 0.0713      | 93.26        |       |
|                        |               |             |              |       |
| 1166-150-F2<br>Ceramic | 1.0540        | 0.0345      | 96.73        | 93.73 |
| 1166-150-F2<br>Ceramic | 1.0137        | 0.0908      | 91.04        |       |
| 1166-150-F2<br>Ceramic | 1.0334        | 0.0681      | 93.41        |       |

### Cycle 4 (16 Wipes)

| Cleaner               | Initial<br>wt | Final<br>wt | %<br>Removed |       |
|-----------------------|---------------|-------------|--------------|-------|
| 1166-150-A<br>Ceramic | 1.0935        | 0.0241      | 97.80        | 95.01 |
| 1166-150-A<br>Ceramic | 1.0180        | 0.0607      | 94.04        |       |
| 1166-150-A<br>Ceramic | 1.0477        | 0.0714      | 93.19        |       |
|                       |               |             |              |       |
| 1166-150-B<br>Ceramic | 1.0701        | 0.0625      | 94.16        | 95.20 |
| 1166-150-B<br>Ceramic | 1.0760        | 0.0398      | 96.30        |       |

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|                        |        |        |       |       |
|------------------------|--------|--------|-------|-------|
| 1166-150-B<br>Ceramic  | 1.0547 | 0.0512 | 95.15 |       |
|                        |        |        |       |       |
| 1166-150-C<br>Ceramic  | 1.0034 | 0.0493 | 95.09 | 94.17 |
| 1166-150-C<br>Ceramic  | 1.0789 | 0.0339 | 96.86 |       |
| 1166-150-C<br>Ceramic  | 1.0466 | 0.0987 | 90.57 |       |
|                        |        |        |       |       |
| 1166-150-D<br>Ceramic  | 0.9941 | 0.0272 | 97.26 | 96.18 |
| 1166-150-D<br>Ceramic  | 1.0189 | 0.0399 | 96.08 |       |
| 1166-150-D<br>Ceramic  | 1.0344 | 0.0496 | 95.20 |       |
|                        |        |        |       |       |
| 1166-150-E<br>Ceramic  | 1.0281 | 0.0265 | 97.42 | 96.36 |
| 1166-150-E<br>Ceramic  | 1.0328 | 0.0500 | 95.16 |       |
| 1166-150-E<br>Ceramic  | 1.0573 | 0.037  | 96.50 |       |
|                        |        |        |       |       |
| 1166-150-F2<br>Ceramic | 1.0540 | 0.0256 | 97.57 | 95.06 |
| 1166-150-F2<br>Ceramic | 1.0137 | 0.0769 | 92.41 |       |
| 1166-150-F2<br>Ceramic | 1.0334 | 0.0497 | 95.19 |       |

### Cycle 5 (20 Wipes)

| Cleaner               | Initial<br>wt | Final<br>wt | %<br>Removed |       |
|-----------------------|---------------|-------------|--------------|-------|
| 1166-150-A<br>Ceramic | 1.0935        | 0.0191      | 98.25        | 95.56 |
| 1166-150-A<br>Ceramic | 1.0180        | 0.0567      | 94.43        |       |
| 1166-150-A<br>Ceramic | 1.0477        | 0.0630      | 93.99        |       |
|                       |               |             |              |       |
| 1166-150-B<br>Ceramic | 1.0701        | 0.0496      | 95.36        | 96.15 |
| 1166-150-B<br>Ceramic | 1.0760        | 0.0306      | 97.16        |       |
| 1166-150-B<br>Ceramic | 1.0547        | 0.0428      | 95.94        |       |
|                       |               |             |              |       |
| 1166-150-C<br>Ceramic | 1.0034        | 0.0455      | 95.47        | 94.83 |
| 1166-150-C<br>Ceramic | 1.0789        | 0.0300      | 97.22        |       |
| 1166-150-C<br>Ceramic | 1.0466        | 0.0859      | 91.79        |       |
|                       |               |             |              |       |
| 1166-150-D<br>Ceramic | 0.9941        | 0.0198      | 98.01        | 96.86 |
| 1166-150-D<br>Ceramic | 1.0189        | 0.0348      | 96.58        |       |
| 1166-150-D<br>Ceramic | 1.0344        | 0.0414      | 96.00        |       |
|                       |               |             |              |       |
| 1166-150-E<br>Ceramic | 1.0281        | 0.0229      | 97.77        | 97.43 |

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|                        |        |        |       |       |
|------------------------|--------|--------|-------|-------|
| 1166-150-E<br>Ceramic  | 1.0328 | 0.0325 | 96.85 |       |
| 1166-150-E<br>Ceramic  | 1.0573 | 0.0245 | 97.68 |       |
|                        |        |        |       |       |
| 1166-150-F2<br>Ceramic | 1.0540 | 0.0202 | 98.08 | 95.63 |
| 1166-150-F2<br>Ceramic | 1.0137 | 0.0648 | 93.61 |       |
| 1166-150-F2<br>Ceramic | 1.0334 | 0.0497 | 95.19 |       |

### Visual Ratings

| Cleaners    | Substrates | Visual Removal (%) |    | Average |      |
|-------------|------------|--------------------|----|---------|------|
| 1166-150-A  | Ceramic    | 95.98              | 96 | 96.3    |      |
|             | Ceramic    | 95.97              | 95 | 95.7    |      |
|             | Ceramic    | 96.98              | 96 | 96.7    | 96.2 |
| 1166-150-B  | Ceramic    | 93.96              | 94 | 94.3    |      |
|             | Ceramic    | 95.99              | 97 | 97      |      |
|             | Ceramic    | 96.99              | 97 | 97.3    | 96.2 |
| 1166-150-C  | Ceramic    | 92.99              | 94 | 95      |      |
|             | Ceramic    | 96.98              | 97 | 97      |      |
|             | Ceramic    | 97.99              | 97 | 97.7    | 96.6 |
| 1166-150-D  | Ceramic    | 95.98              | 97 | 96.7    |      |
|             | Ceramic    | 96.98              | 96 | 96.7    |      |
|             | Ceramic    | 97.98              | 97 | 97.3    | 96.9 |
| 1166-150-E  | Ceramic    | 96.99              | 96 | 97      |      |
|             | Ceramic    | 95.98              | 97 | 96.7    |      |
|             | Ceramic    | 98.98              | 99 | 98.3    | 97.3 |
| 1166-150-F2 | Ceramic    | 97.97              | 96 | 96.7    |      |
|             | Ceramic    | 97.97              | 96 | 96.7    |      |
|             | Ceramic    | 98.97              | 96 | 97      | 96.8 |

### Summary:

| <b>Substrates:</b>              | Ceramics      |        |             |                                     |               |
|---------------------------------|---------------|--------|-------------|-------------------------------------|---------------|
| <b>Contaminants:</b>            | Greases, Food |        |             |                                     |               |
| Company Name:                   | Product Name: | Conc.: | Efficiency: | Effective:                          | Observations: |
| Elevance Renewable Sciences Inc | 1166-150-A    | 100    | 93.57       | <input checked="" type="checkbox"/> | 12 wipes      |
| Elevance Renewable Sciences Inc | 1166-150-B    | 100    | 90.12       | <input checked="" type="checkbox"/> | 8 wipes       |
| Elevance Renewable Sciences Inc | 1166-150-C    | 100    | 93.07       | <input checked="" type="checkbox"/> | 12 wipes      |
| Elevance Renewable Sciences Inc | 1166-150-D    | 100    | 94.59       | <input checked="" type="checkbox"/> | 12 wipes      |
| Elevance Renewable Sciences Inc | 1166-150-E    | 100    | 92.40       | <input checked="" type="checkbox"/> | 8 wipes       |
| Elevance Renewable Sciences Inc | 1166-150-F    | 100    | 93.73       | <input checked="" type="checkbox"/> | 12 wipes      |

### Conclusion:

All cleaners were effective. The cleaner 1166-150-C was least effective of the tested cleaners by removing 94.83% and cleaner 1166-150-E was the most effective removing 97.44%. Visually, all cleaners looked of the same cleanliness, but 1166-150-E looked the cleanest and was the most effective of the cleaners. Overall, the percentage of removal was consistent with the visual average. These pictures have been included in a supplementary file.