

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014  
DateRun: 03/11/2014  
Experimenters: George Liang, Francisco Abreau  
ClientType: Cleaner Manufacturer  
ProjectNumber: Project #1  
Substrates: Ceramics, Plastic, Steel  
PartType: Coupon  
Contaminants: Hucker's Soil  
Cleaning Methods: Manual Wipe  
Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for all purpose cleaning using manual cleaning

Experimental Procedure: Prew weighed ceramic, painted steel, and plastic coupons were coated with hucker soil using a hand held swab and were 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 Wypall L30 reinforced wipe was attached to the cleaning sled and soaked with 1 spray of cleaning solutions with a VWR bottle. Each coupon was sprayed 1 time with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 20 cycles (~30 seconds). Efficiency was calculated for each coupon.

Results:

|                          | Initial wt | Final wt | % Removed | Average |
|--------------------------|------------|----------|-----------|---------|
| Chrisal 1%-Ceramic       |            |          |           |         |
|                          | 0.5769     | 0.3632   | 37.04     |         |
|                          | 0.6133     | 0.4229   | 31.05     |         |
|                          | 0.6127     | 0.4257   | 30.52     | 32.87   |
| Chrisal 1%-Painted Steel |            |          |           |         |
|                          | 0.6013     | 0.4078   | 32.18     |         |
|                          | 0.6019     | 0.4095   | 31.97     |         |
|                          | 0.6430     | 0.4096   | 36.30     | 33.48   |
| Chrisal 1%-Plastic       |            |          |           |         |
|                          | 0.6972     | 0.2206   | 68.36     |         |
|                          | 0.6469     | 0.5046   | 22.00     |         |
|                          | 0.6740     | 0.4746   | 29.58     | 39.98   |
| Chrisal 2%-Ceramic       |            |          |           |         |
|                          | 0.5879     | 0.4007   | 31.84     |         |
|                          | 0.6002     | 0.4374   | 27.12     |         |
|                          | 0.6370     | 0.3907   | 38.67     | 32.54   |
| Chrisal 2%-Painted Steel |            |          |           |         |
|                          | 0.6111     | 0.4222   | 30.91     |         |
|                          | 0.5610     | 0.2430   | 56.68     |         |
|                          | 0.8728     | 0.4521   | 48.20     | 45.27   |
| Chrisal 2%-Plastic       |            |          |           |         |
|                          | 0.6396     | 0.3833   | 40.07     |         |
|                          | 0.7112     | 0.4276   | 39.88     |         |
|                          | 0.7179     | 0.3544   | 50.63     | 43.53   |
| Chrisal 3%-Ceramic       |            |          |           |         |
|                          | 0.6445     | 0.4623   | 28.27     |         |

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|                                 |        |        |       |       |
|---------------------------------|--------|--------|-------|-------|
|                                 | 0.6535 | 0.4826 | 26.15 |       |
|                                 | 0.6193 | 0.4493 | 27.45 | 27.29 |
| Chrisal 3%-<br>Painted<br>Steel |        |        |       |       |
|                                 | 0.6377 | 0.3928 | 38.40 |       |
|                                 | 0.5900 | 0.4431 | 24.90 |       |
|                                 | 0.5476 | 0.3088 | 43.61 | 35.64 |
| Chrisal 3%-<br>Plastic          |        |        |       |       |
|                                 | 0.3873 | 0.1783 | 53.96 |       |
|                                 | 0.4796 | 0.2158 | 55.00 |       |
|                                 | 0.6409 | 0.3223 | 49.71 | 52.89 |
| 409-Ceramic                     |        |        |       |       |
|                                 | 0.6435 | 0.3881 | 39.69 |       |
|                                 | 0.6196 | 0.4678 | 24.50 |       |
|                                 | 0.6305 | 0.5182 | 17.81 | 27.33 |
| 409- Painted<br>Steel           |        |        |       |       |
|                                 | 0.7698 | 0.1594 | 79.29 |       |
|                                 | 0.6756 | 0.2421 | 64.17 |       |
|                                 | 0.6840 | 0.6019 | 12.00 | 51.82 |
| 409- Plastic                    |        |        |       |       |
|                                 | 0.6791 | 0.4780 | 29.61 |       |
|                                 | 0.6098 | 0.3193 | 47.64 |       |
|                                 | 0.6554 | 0.2829 | 56.84 | 44.70 |

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> |
| Chrisal USA Inc      | PIP Probiotic All-Purpose Cleaner | 1             | 64.70              | <input type="checkbox"/> |                      |
| Clorox Company       | Formula 409 All Purpose Cleaner   | 100           | 72.49              | <input type="checkbox"/> |                      |

Conclusion:

Each product has shown a similar level of unsatisfactory results. The product with the highest removal efficiency was Clorox 409 at over 41%.