

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010
DateRun: 04/27/2010
Experimenters: Junhee Cho
ClientType: Cleaner Manufacturer
ProjectNumber: Project #1
Substrates: Stainless Steel
PartType: Coupon
Contaminants: Hucker's Soil
Cleaning Methods: Manual Wipe
Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for presoaking capabilities for manual dishwashing.

Experimental Procedure: Prewieghed stainless steel coupons were coated with a modified Hucker's soil and then placed in a conventional oven at 100 F for 2 hours. Dirty weights were recorded after the coupons cooled to room temperature. One set of coupons were cleaned

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.

A second set of soiled coupons were first immersed into the cleaning solutions for 10 minutes and then cleaned following the manual cleaning process. Results were compared for each methodology.

The two client supplied products were diluted according to recommendations using DI water (0.8 and 0.13). A comparative product was used at the 0.1% dilution recommended by the ASTM 4009 for foam stability in manual cleaning. Water also was used.

Results: The two supplied products were more effective at removing the Hucker's soil from the three surfaces using the presoaking with manual wiping. Dawn and water both had lower efficiency after soaking than manual cleaning alone. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|---|------------|----------|-----------|
| Alpha Chemical Liquid presoak 0.8% (presoaking) | 0.0337 | 0.0016 | 95.25 |
| | 0.0566 | 0.0028 | 95.05 |
| | 0.0289 | 0.0029 | 89.97 |
| Alpha Chemical Solid presoak 0.3% (presoaking) | 0.0283 | 0.0056 | 80.21 |
| | 0.0777 | 0.0086 | 88.93 |
| | 0.0612 | 0.0044 | 92.81 |
| Dawn cleaner 0.1 % (presoaking) | 0.0278 | 0.0122 | 56.12 |
| | 0.1104 | 0.0057 | 94.84 |
| | 0.0675 | 0.0036 | 94.67 |
| Water 100% (presoaking) | 0.0549 | 0.0142 | 74.13 |
| | 0.1523 | 0.0272 | 82.14 |
| | 0.0663 | 0.0152 | 77.07 |
| Alpha Chemical Liquid presoak 0.8% (non-pres soaking) | 0.2667 | 0.016 | 94.00 |
| | 0.0267 | 0.0025 | 90.64 |
| | 0.0294 | 0.0043 | 85.37 |
| Alpha Chemical Solid presoak 0.3% (non-pres soaking) | 0.0324 | 0.0077 | 76.23 |
| | 0.0377 | 0.0111 | 70.56 |

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|--|--------|--------|-------|
| | 0.0537 | 0.0103 | 80.82 |
| Dawn cleaner 0.1 % (non-pres soaking) | 0.0609 | 0.0068 | 88.83 |
| | 0.0379 | 0.0071 | 81.27 |
| | 0.1227 | 0.0148 | 87.94 |
| water 100% (non- pres soaking) | 0.0833 | 0.0352 | 57.74 |
| | 2.0382 | 0.0066 | 99.68 |
| | 0.0286 | 0.0059 | 79.37 |

Summary:

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|-------------------------|----------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Stainless Steel | | | | |
| Contaminants: | Hucker's Soil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Alpha Chemical Services | Liquid Presoak | 0.8 | 93.42 | <input checked="" type="checkbox"/> | |
| Alpha Chemical Services | Solid Presoak | 0.3 | 87.32 | <input checked="" type="checkbox"/> | |
| Procter & Gamble | Dawn Dish Detergent | 0.1 | 81.87 | <input type="checkbox"/> | |
| Water | Water | 100 | 77.78 | <input type="checkbox"/> | |

Conclusion:

The supplied presoak products removed over 85% of the aged soil. Both worked better than water or Dawn and better than cleaning without a presoak.