

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 09/08/2020

Experimenters: Zoe Lawson, Nicole Kebler

ClientType: Lab

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Part

Contaminants: Greases, Oil, Food

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Performance Test

Purpose: A non-client test evaluating the effectiveness of solid dish soap against comparative liquid dish soaps using a dish brush to remove ASTM 4009 Soil B from ceramic plates.

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Initial weights of eleven clean ceramic plates per dish soap were taken before soiling with six grams of 4009 Soil B (50% All-Purpose Flour, 48% Crisco Shortening, and 2% Olive Oil) and air-dried for 24 hours at room temperature (68°F). Dirty weights were taken the next day. The dish soaps, both solid and liquid, were placed on a flat surface before swirling a new soap dish brush per product for five seconds to pick up the soap. Four liters of tap water heated to 120°F, which was recorded when poured sequentially into the washing basin. Twenty seconds after the reservoir was prepared, the manual cleaning method began. Each plate was washed at an angle, half-submerged in the water, cleaning both the front and back sides of each plate with the brush in a circular motion for 10 seconds before a one-second rinse with cold tap water and air-dried for 24 hours. This process was repeated for each of the dish soaps. Final weights were taken the next day.

Results:

| Cleaner | Initial wt | Cont. wt | Clean wt. | Initial wt of cont. | Final wt of cont. | %Cont Removed | Average % Removal |
|------------------------|------------|----------|-----------|---------------------|-------------------|---------------|-------------------|
| Ardent Goods Dish Soap | 438.98 | 441.39 | 439.15 | 2.4100 | 0.1700 | 92.95 | 95.19 |
| | 480.75 | 483.10 | 480.83 | 2.3500 | 0.0800 | 96.60 | |
| | 428.11 | 430.87 | 428.22 | 2.7600 | 0.1100 | 96.01 | |
| | 459.92 | 462.51 | 459.97 | 2.5900 | 0.0500 | 98.07 | |
| | 433.87 | 436.78 | 433.90 | 2.9100 | 0.0300 | 98.97 | |
| | 466.05 | 468.80 | 466.09 | 2.7500 | 0.0400 | 98.55 | |
| | 417.47 | 420.12 | 417.60 | 2.6500 | 0.1300 | 95.09 | |
| | 465.12 | 467.55 | 465.18 | 2.4300 | 0.0600 | 97.53 | |
| | 401.54 | 404.13 | 401.80 | 2.5900 | 0.2600 | 89.96 | |
| | 397.48 | 399.79 | 397.58 | 2.3100 | 0.1000 | 95.67 | |
| | 453.77 | 456.29 | 453.83 | 2.5200 | 0.0600 | 97.62 | |
| Dawn Liquid Dish Soap | 429.90 | 432.30 | 430.09 | 2.4000 | 0.1900 | 92.08 | 95.98 |
| | 468.17 | 470.68 | 468.28 | 2.5100 | 0.1100 | 95.62 | |
| | 436.58 | 438.96 | 436.64 | 2.3800 | 0.0600 | 97.48 | |
| | 464.19 | 466.71 | 464.32 | 2.5200 | 0.1300 | 94.84 | |
| | 468.93 | 471.44 | 468.92 | 2.5100 | -0.0100 | 100.40 | |
| | 425.55 | 428.25 | 425.59 | 2.7000 | 0.0400 | 98.52 | |
| | 421.92 | 424.50 | 422.00 | 2.5800 | 0.0800 | 96.90 | |
| | 410.67 | 413.53 | 410.79 | 2.8600 | 0.1200 | 95.80 | |
| | 446.79 | 449.20 | 446.87 | 2.4100 | 0.0800 | 96.68 | |
| | 449.85 | 452.36 | 449.94 | 2.5100 | 0.0900 | 96.41 | |
| | 469.38 | 471.73 | 469.60 | 2.3500 | 0.2200 | 90.64 | |
| Joy Liquid Dish Soap | 438.98 | 441.20 | 439.06 | 2.2200 | 0.0800 | 96.40 | 96.33 |
| | 480.75 | 482.84 | 480.78 | 2.0900 | 0.0300 | 98.56 | |
| | 428.11 | 430.39 | 428.16 | 2.2800 | 0.0500 | 97.81 | |
| | 459.92 | 461.95 | 460.07 | 2.0300 | 0.1500 | 92.61 | |
| | 433.87 | 436.06 | 433.88 | 2.1900 | 0.0100 | 99.54 | |
| | 466.05 | 468.41 | 466.12 | 2.3600 | 0.0700 | 97.03 | |
| | 417.47 | 419.68 | 417.60 | 2.2100 | 0.1300 | 94.12 | |

CLEANING LABORATORY EVALUATION SUMMARY

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|-----------------------|--------|--------|--------|--------|--------|-------|-------|
| | 465.12 | 466.49 | 465.16 | 1.3700 | 0.0400 | 97.08 | |
| | 401.54 | 403.66 | 401.68 | 2.1200 | 0.1400 | 93.40 | |
| | 397.48 | 399.54 | 397.58 | 2.0600 | 0.1000 | 95.15 | |
| | 453.77 | 456.35 | 453.91 | 2.5800 | 0.1400 | 94.57 | |
| Mrs. Meyers Dish Soap | 429.90 | 431.93 | 429.98 | 2.0300 | 0.0800 | 96.06 | 95.77 |
| | 468.17 | 470.40 | 468.28 | 2.2300 | 0.1100 | 95.07 | |
| | 436.58 | 438.32 | 436.67 | 1.7400 | 0.0900 | 94.83 | |
| | 464.19 | 466.51 | 464.25 | 2.3200 | 0.0600 | 97.41 | |
| | 468.93 | 471.12 | 469.02 | 2.1900 | 0.0900 | 95.89 | |
| | 425.55 | 427.28 | 425.59 | 1.7300 | 0.0400 | 97.69 | |
| | 421.92 | 423.92 | 422.07 | 2.0000 | 0.1500 | 92.50 | |
| | 410.67 | 412.91 | 410.70 | 2.2400 | 0.0300 | 98.66 | |
| | 446.79 | 449.04 | 446.97 | 2.2500 | 0.1800 | 92.00 | |
| | 449.85 | 452.22 | 450.03 | 2.3700 | 0.1800 | 92.41 | |
| | 469.38 | 471.76 | 469.50 | 2.3800 | 0.1200 | 94.96 | |

Summary:

| | | | | | |
|----------------------|-----------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Ceramics | | | | |
| Contaminants: | Greases, Oil, Food | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Ardent Goods | Solid Dish Soap | 100% | 95.19 | <input checked="" type="checkbox"/> | |
| Procter & Gamble | Dawn Ultra Dishwasher Liquid Soap | 100% | 95.98 | <input checked="" type="checkbox"/> | |
| Procter & Gamble | Joy Dishwashing Soap | 100% | 96.33 | <input checked="" type="checkbox"/> | |
| Mrs Myers Clean Day | Mrs Meyers Liquid Dish Soap | 100% | 95.77 | <input checked="" type="checkbox"/> | |

Conclusion:

All products were considered effective at removing 4009 Soil B from ceramic plates using a dish brush.