

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014

DateRun: 07/28/2014

Experimenters: Loc Nguyen

ClientType: Cleaner Manufacturer

ProjectNumber: Project #3

Substrates: Ceramics

PartType: Coupon

Contaminants: Food

Cleaning Methods: Manual Wipe

Analytical Methods: Visual

Purpose: To measure the foam stability of light-duty hand dishwashing detergent products in the presence of artificially soiled plates.

Experimental Procedure: Soiled dinner plates are washed by hand in solutions of hand dishwashing detergents under standardized conditions until an end point of near disappearance of the foam is reached, after which the number of plates washed is compared to the number of plates washed using a standard product. The guide, as now constituted, is not suitable for ranking of hand dishwashing products, since no basis is available at this time for correlation of the foam stability of these products using any particular food soil or combination of soils with consumers' ranking of performance. Materials used included, plain white glazed dinner plates in sound condition 8 to 9 in. in diameter, with 6 1/4 to 6 1/2 in.) indented bottom; plastic dishpan (conventional) with bottom diameter = 11 in., top diameter = 14 1/2 in., depth = 5 1/2 in; sponge (any conventional brand); a reservoir of 4-L capacity, that can be readily loaded with test water and that can deliver its contents through a 3/8-in. (inside diameter) drainage tip with an open-shut style to permit full flow immediately upon opening.

The soil mixture used was based on the ASTM soil B: Flour - 50 %; Shortening - 48 %; Olive oil - 2 %. The shortening and the olive oil were warmed to 100°F. Then the flour was slowly added while mixing with a spatula and warming to 120°F. The temperature was held at 120+/-3°F while soiling dishes. In order to prevent soil from melting off plates, the wash temperature was not allowed to exceed 117°F. Prewashed plates were coated with 2 grams of soil using a spatula and then spread over the surface of the plate using gloved finger. Soiled plates were then stacked in convenient sized piles (20 to 25 plates). The top plate of each pile was inverted to prevent drying out of soil. After soiling the last plate of each stack, the residual soil on the finger is removed by wiping on the sides of the stacked, soiled plates. Soiled plates were washed the same day as soiling.

Four liters of test water at desired temperature was placed in the reservoir. The standard temperature is at 40 degrees Celsius. The sponge was placed in the wash water and two squirts of the product were applied. The first dish was washed beginning at 30 seconds after the soap addition was completed. One dish was washed at a time, both front and back, using a rotating motion with the sponge while keeping the dish half submerged in an angular position with the bottom of the dishpan. A soiled dish was washed every 30 s and the process was continued until the sponge is observed to have no white soap foam left after a squeeze.

Chemistries Evaluated: Dawn Platinum dishwashing cleaner, Dawn Gentle Clean dish washing cleaner, Palmolive Original dishwashing cleaner, Palmolive Oxy washing cleaner, Ajax Triple Action dishwashing cleaner, Brand Buzz Moisturizing Shea & Aloe dish washing cleaner, Brand Buzz Basic Citrus Sage dishwashing cleaner, Brand Buzz Oxy dish washing cleaner, Brand Buzz Basic Pink Grapefruit dishwashing cleaner, Brand Buzz Heavy Duty 409 Lavender dish washing cleaner

## Results:

| Product                | Start Temp | End Temp | # of Plates | Tester |
|------------------------|------------|----------|-------------|--------|
| Dawn Platinum          | 40.1       | 38.7     | 2           | 1      |
| Dawn Platinum          | 40.8       | 39       | 1           | 1      |
| Dawn Platinum          | 41         | 38.8     | 2           | 1      |
| Dawn Platinum          | 41.2       | 38       | 3           | 2      |
| Dawn Platinum          | 40         | 37.8     | 2           | 2      |
| Dawn Platinum          | 40.1       | 38.2     | 3           | 2      |
| Average                | 40.5       | 38.4     | 2.2         |        |
| Product                | Start Temp | End Temp | # of Plates | Tester |
| Dawn Gentle Clean 39.9 | 38         |          | 2           | 1      |
| Dawn Gentle Clean 40.5 | 37         |          | 3           | 1      |

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|                                     |            |            |             |             |
|-------------------------------------|------------|------------|-------------|-------------|
| Dawn Gentle Clean 40.3              | 38.2       |            | 2           | 1           |
| Dawn Gentle Clean 39.7              | 37         |            | 2           | 2           |
| Dawn Gentle Clean 40.3              | 37.5       |            | 3           | 2           |
| Dawn Gentle Clean 39.9              | 37.2       |            | 2           | 2           |
| Average                             | 40.1       |            | 37.5        | 2.33        |
| Product                             | Start Temp | End Temp   | # of Plates | Tester      |
| Palmolive Original 40.2             | 37.7       |            | 2           | 1           |
| Palmolive Original 40.6             | 38.6       |            | 2           | 1           |
| Palmolive Original 40.1             | 38         |            | 3           | 1           |
| Palmolive Original 40.9             | 38.8       |            | 2           | 2           |
| Palmolive Original 40.8             | 38         |            | 3           | 2           |
| Palmolive Original 40.3             | 38.2       |            | 2           | 2           |
| Average                             | 40.5       |            | 38.2        | 2.33        |
| Product                             | Start Temp | End Temp   | # of Plates | Tester      |
| Palmolive Oxy                       | 40.5       | 38         | 1           | 1           |
| Palmolive Oxy                       | 40.5       | 38.7       | 1           | 1           |
| Palmolive Oxy                       | 40         | 38         | 1           | 1           |
| Palmolive Oxy                       | 40.3       | 38.2       | 1           | 2           |
| Palmolive Oxy                       | 40.5       | 38.2       | 1           | 2           |
| Palmolive Oxy                       | 40.7       | 38.1       | 1           | 2           |
| Average                             | 40.4       | 38.2       | 1           |             |
| Product                             | Start Temp | End Temp   | # of Plates | Tester      |
| Ajax Triple Act                     | 39.7       | 37         | 3           | 1           |
| Ajax Triple Act                     | 40.5       | 38         | 2           | 1           |
| Ajax Triple Act                     | 40         | 38         | 2           | 1           |
| Ajax Triple Act                     | 40.7       | 38.1       | 2           | 2           |
| Ajax Triple Act                     | 40.7       | 38.2       | 2           | 2           |
| Ajax Triple Act                     | 40.3       | 38.1       | 2           | 2           |
| Average                             | 40.3       | 37.9       | 2.2         |             |
| Product                             |            | Start Temp | End Temp    | # of Plates |
| Brand Buzz Moisturizing Shea & Aloe | 41         | 39         | 1           | 1           |
| Brand Buzz Moisturizing Shea & Aloe | 40.2       | 39         | 1           | 1           |
| Brand Buzz Moisturizing Shea & Aloe | 40.9       | 38.6       | 1           | 1           |
| Brand Buzz Moisturizing Shea & Aloe | 40.1       | 37.9       | 1           | 2           |
| Brand Buzz Moisturizing Shea & Aloe | 40.2       | 38         | 1           | 2           |
| Brand Buzz Moisturizing Shea & Aloe | 40.3       | 38         | 1           | 2           |

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|                                    |            |            |             |             |
|------------------------------------|------------|------------|-------------|-------------|
| Average                            |            | 40.5       | 38.4        | 1           |
| Product                            |            | Start Temp | End Temp    | # of Plates |
| Brand Buzz Basic Citrus Sage       | 40         | 37.9       | 1           | 1           |
| Brand Buzz Basic Citrus Sage       | 40.6       | 39         | 1           | 1           |
| Brand Buzz Basic Citrus Sage       | 41.2       | 39.2       | 1           | 1           |
| Brand Buzz Basic Citrus Sage       | 40.3       | 38         | 1           | 2           |
| Brand Buzz Basic Citrus Sage       | 40.2       | 38.1       | 1           | 2           |
| Brand Buzz Basic Citrus Sage       | 40.1       | 38.1       | 1           | 2           |
| Average                            |            | 40.4       | 38.4        | 1           |
| Product                            | Start Temp | End Temp   | # of Plates | Tester      |
| Brand Buzz Oxy                     | 39         | 36         | 1           | 1           |
| Brand Buzz Oxy                     | 41.2       | 39.2       | 1           | 1           |
| Brand Buzz Oxy                     | 40.6       | 39.3       | 1           | 1           |
| Brand Buzz Oxy                     | 40.1       | 37.7       | 1           | 2           |
| Brand Buzz Oxy                     | 40         | 37.9       | 1           | 2           |
| Brand Buzz Oxy                     | 39.8       | 37.2       | 1           | 2           |
| Average                            | 49.1       | 37.9       | 1           |             |
| Product                            |            | Start Temp | End Temp    | # of Plates |
| Brand Buzz Basic Pink Grapefruit   | 40.7       | 38         | 1           | 1           |
| Brand Buzz Basic Pink Grapefruit   | 39.9       | 37.1       | 1           | 1           |
| Brand Buzz Basic Pink Grapefruit   | 40.6       | 38.1       | 1           | 1           |
| Brand Buzz Basic Pink Grapefruit   | 40.1       | 38.9       | 1           | 2           |
| Brand Buzz Basic Pink Grapefruit   | 40.1       | 37.9       | 1           | 2           |
| Brand Buzz Basic Pink Grapefruit   | 40.1       | 38.1       | 1           | 2           |
| Average                            |            | 40.3       | 38          | 1           |
| Product                            | Start Temp | End Temp   | # of Plates | Tester      |
| Brand Buzz Heavy Duty 409 Lavender | 40.2       | 37.2       | 1           | 1           |
| Brand Buzz Heavy Duty 409 Lavender | 39.7       | 38         | 1           | 1           |
| Brand Buzz Heavy Duty 409 Lavender | 39.9       | 37.1       | 1           | 1           |
| Brand Buzz Heavy Duty 409 Lavender | 40.1       | 38.1       | 1           | 2           |
| Brand Buzz Heavy Duty 409 Lavender | 39.8       | 37.1       | 1           | 2           |
| Brand Buzz Heavy Duty 409 Lavender | 39.9       | 38         | 1           | 2           |
| Average                            |            | 39.9       | 37.6        | 1           |

Summary

|               |             |
|---------------|-------------|
| Dawn Platinum | 2.17 plates |
|---------------|-------------|

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|                                     |             |
|-------------------------------------|-------------|
| Dawn Gentle Clean                   | 2.33 plates |
| Palmolive Original                  | 2.33 plates |
| Palmolive Oxy                       | 1.00 plates |
| Ajax Triple Action                  | 2.17 plates |
| Brand Buzz Moisturizing Shea & Aloe | 1.00 plates |
| Brand Buzz Basic Citrus Sage        | 1.00 plates |
| Brand Buzz Oxy                      | 1.00 plates |
| Brand Buzz Basic Pink Grapefruit    | 1.00 plates |
| Brand Buzz Heavy Duty 409 Lavender  | 1.00 plates |

Summary:

|                           |  |               |                    |                                     |                      |
|---------------------------|--|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>        | Ceramics                                   |               |                    |                                     |                      |
| <b>Contaminants:</b>      | Food                                       |               |                    |                                     |                      |
| <b>Company Name:</b>      | <b>Product Name:</b>                       | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Fisher Scientific         | Absolute Ethanol                           | 0             | 0.00               | <input type="checkbox"/>            |                      |
| Procter & Gamble          | Dawn Platinum                              | 0.1           |                    | <input type="checkbox"/>            | 2.17 plates          |
| Procter & Gamble          | Dawn Gentle Clean                          | 0.1           |                    | <input checked="" type="checkbox"/> | 2.33 plates          |
| Colgate-Palmolive Company | Oxy Power Degreaser                        | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |
| Colgate-Palmolive Company | Palmolive Dish Soap                        | 0.1           |                    | <input checked="" type="checkbox"/> | 2.33 plates          |
| Procter & Gamble          | Ajax Triple Action Orange Dish & Hand Soap | 0.1           |                    | <input type="checkbox"/>            | 2.17 plates          |
| Brand Buzz                | Moisturizing Shea & Aloe                   | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |
| Brand Buzz                | Basic Citrus Sage Dishwash                 | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |
| Brand Buzz                | Brand Buzz Oxy Dishwashing                 | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |
| Brand Buzz                | Brand Buzz Basic Pink Grapefruit Dishwash  | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |
| Brand Buzz                | Brand Buzz Heavy Duty 409 Lavender         | 0.1           |                    | <input type="checkbox"/>            | 1 plate              |

Conclusion:

The foam stability of Dawn Platinum, Dawn Gentle Clean, Palmolive Original and Ajax Triple Action had double the number of dishes being cleaned on average than that of any Brand Buzz dish cleaning products. After squeezing the sponge, it was clear that the white foam in the soap was gone when it was observed that the soap itself only secreted orange soil scum.