CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2010
DateRun:	04/22/2010
Experimenters:	Jason Marshall, Junhee Cho, Scott Nadolna
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics
PartType:	Coupon
Contaminants:	Food
Cleaning Methods:	Manual Wipe
Analytical Methods:	Waterbreak
Purpose:	To measure the foam stability of light-duty hand dishwashing detergent products in the presence of artificially applied test food soils.

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; dishcloth (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 6 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.

The product concentration used was specified by the client. The standard temperature is was 117°F. Four liters of test water at desired hardness and temperature was placed in the reservoir.
One hundred mL of test water from the reservoir was removed and divided into four equal portions. The concentrate of the cleaning product was added to one flask with 25 ml of water and added to the wash pan. The flask was rinsed with 25 mL of test water three times, pouring each rinse into the wash pan. Then the remaining 3.9 L of test water in the reservoir was added to the wash pan. The reservoir delivery tip was situated 24 in. above the bottom of the dish pan so that it delivers into the center of the pan.

The dishcloth was placed in the wash water and the first dish was washed beginning at 20 s after the water addition was completed. One dish was washed at a time, both front and back, using a rotating motion with the dishcloth 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 an end point was reached where just half the surface of the wash solution shows a thin layer of foam. Dishes washed can be rated at whole or half dishes, depending on the operator's measurement of residual foam. The process was repeated three times.

Three supplied products were compared with standard product (at 0.1%).

Results:

The two presoak products yielded lower plate counts for foam stability when compared with the Solid Pot & Pan cleaner and the reference product Dawn. The table lists the number of plates to reach the end point for each product.

Product	Plates 1	Plates 2	Plates 3	Average Plates
Liquid Presoak	3	4	5	4
Solid Presoak	4	4	3	3.7
Solid Pot & Pan	9	8	8	8.3
Dawn	14	13	15	14

Summary:

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Substrates:	Ceramics				
Contaminants:	Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Alpha Chemical Services	Liquid Presoak	0.8	0.00	☐	4 plates
Alpha Chemical Services	Solid Presoak	0.3	0.00	☐	3.7 plates
Alpha Chemical Services	Solid Pot and Pan	0.13	0.00	☐	8.3 plates
Procter & Gamble	Dawn Dish Detergent	0.1	0.00	☑	14 plates

Conclusion: The two presoaking products were significantly lower than the Dawn product (about 10 plates fewer). The Kitchen Pot and Pan cleaner averaged just over 8 plates (twice that of the presoak products).