CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	04/23/2015
Experimenters:	Loc Nguyen, George Liang
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #2
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 DCC-18 Neat dishwashing method: 10.7% Lard, 21.3% Vegetable Oil, 13% Whole egg powder, 11% Potato Flour, and 44% Deionized water. 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 2 grams of the product were applied. The first dish was washed beginning at 20 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 20 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, Pro-Natural dishwashing DS-3

Results:

Tester	Product	Initial Temp °F	Final Temp °F	# Plates
1	Pro-Natural DS-3	108	104	4
		108	102	4
		106	100	4
	Dawn Original	106	104	5
		110	104	4
		110	106	4
2	Pro-Natural DS-3	110	106	4
		110	105	4
		110	105	4
	Dawn Original	110	106	4
		108	105	4
		111	107	5

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Pro-Natural DS-3	4.00 Plates
Dawn Original	4.33 Plates

Summary:

Substrates:	Ceramics
Contaminants:	Food

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Fisher Scientific	Absolute Ethanol	0	0.00	☐	
ProNatural Brands LLC	DS 3 Dishwashing	0.1	0.00	☐	4 plates
Procter & Gamble	Dawn Dish Detergent	0.1	0.00	☑	4.3 plates

Conclusion:

The foam stability of Dawn Original was slightly more efficient in soil removal than that of Pro-Natural DS-3 dish cleaning product. Dawn Original had a higher number of dishes being cleaned on average to those of Pro-Natural DS-3 with 4.33 plates to 4 plates respectively; however, this slight difference is within the experimental error and both products likely exhibit similar performance. 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 yellow soil scum.