CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2020
DateRun:	03/04/2020
Experimenters:	Sabrina Apel, Tuan Le
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics
PartType:	Coupon
Contaminants:	Food
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To qualitatively evaluate dish washing liquid prototype performance relative to the designated control

Experimental Procedure:

The test was based off of Cleanyst Standard Operating procedure but was modified slightly at some parts. To make the soil, 1 egg yolk, 40 grams of flour, 20 grams of sugar, 20 grams of butter, and 20 grams of evaporated milk powder were mixed together. Approximately 200 grams of water were added to produce a paste. The mixture was mixed until uniform and heated at 45°C to remove clumps.

3 ceramic plates were obtained for each cleaner. With 2 cleaners and 3 plates per cleaner, 6 plates were obtained. Each plate was ensured to be clean and dry. The plates were then incubated in an oven for 1 hour at approximately 45°C or 113°F.

After the incubation period, the weights of each plate were gravimetrically measured and recorded in the lab notebook. Simultaneously, the soil was then heated in a small beaker that is submerged in a larger beaker with water at approximately 45°C. Approximately 5g of the heated soil was then spread onto the plate using a spatula, which were then reweighed afterwards. The final dirty weights of the soiled plates were then recorded in the lab notebook.

With all 6 plates soiled, the plates were then stacked one on the other and left to air dry overnight. After the air-drying process, the only plate that sufficiently air-dried, was the plate that was directly in contact with the air. To finish the drying process of the other 5 plates, they were placed into the oven to bake for 1 hour at 45°C.

To prepare the cleaning solutions, 40 mL of each cleaner were measured out and mixed with 160 mL of deionized water to form a 20% cleaning solution of each cleaner. 2 new sponges were then obtained and cut into 3 equal parts each to have 6 total sponge pieces for the cleaning process. The 6 sponge pieces were then washed and rinsed with water to remove any initial soap that was in the sponge.

Once the plates had finished incubating, approximately 1 hour, and were sufficiently dried so that when a glass stirring rod was dragged over the top of the soil, with minimal applied pressure, no soil is dragged with it they were removed from the oven, unstacked, and left to come to room temperature.

For the cleaning process, a plate was placed in a bin. Some of the cleaning solution was then poured on top of the plate just so that the soil was covered. The lip of the plate helped to prevent any spillage of cleaner over the sides. The plate and the soap was then left to soak for 30 seconds before cleaning. Once the 30 seconds have elapsed, a sponge piece was then used to make 10 clockwise circular strokes over the top of the plates with minimal pressure. After the 10 clockwise strokes, an additional 10 strokes were made in the counterclockwise motion. The cleaned plates were then rinsed under running warm tap water for 5 seconds. After the rinsing, the plates were then patted dry using pieces of Wypall. The visual and physical state of the plates were then recorded in the notebook.

After the cleaning process for each plate, the plates were left to air dry for 20 minutes before measuring and recording the clean weights in the lab notebook.

Results:

Cleaner	Coupon	Initial wt of cont.	Final wt of cont.	%Cont Removed	Average % Removal
1	1	4.9300	0.9900	79.92	80.08
	2	4.9600	0.9500	80.85	
	3	4.9200	1.0100	79.47	
2	4	5.0100	1.0200	79.64	79.10
	5	5.0200	1.0300	79.48	
	6	4.9500	1.0800	78.18	

Cleaner		Visual Observations

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	Physical Observations	
1	The surface felt relatively smooth. There was some residue that was difficult to see, but added a slight roughness to the surface	The surface was very clean, much of the soil was gone. There was no visual evidence of streaking from the cleaning process. During the cleaning process, the soil dissolved in the cleaner with the agitation
2	The surface felt relatively smooth. There was some residue that was difficult to see, but added a slight roughness to the surface	The surface was very clean, much of the soil was gone. There was no visual evidence of streaking from the cleaning process During the cleaning process, the soil dissolved in the cleaner with the agitation

Summary:

Substrates:	Ceramics				
Contaminants:	Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Cleanyst	Cleanyst Free and Clear Dish Soap	100	0.00	☑	80.08
Mrs Myers Clean Day	Mrs Meyers Liquid Dish Soap	100	79.10	☑	

Conclusion:

Overall, both cleaners were of a similar caliber. During the cleaning process, there was no noticeable visual difference in how the cleaners effected the soil. By a measure of 1%, Cleanyst was more effective as it removed 1% more soil than that of Mrs. Meyer’s Dish Soap. Both cleaners were qualitatively very similar, disregarding the smell difference.