CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	04/28/2015
Experimenters:	Loc Nguyen, George Liang, Carla De La Cruz, Digvijay Devkota
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #3
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Food
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Visual
Purpose:	To evaluate streaking and filming.
Experimental Procedure:	The purpose of this evaluation was to assess the effects of spotting and filming on the substrate due to the cleaner in a mechanical dishwashing machine.

The standard used is based on ASTM D3556 Deposition on Glassware during Mechanical Dishwashing Procedure. Six glasses that are 6 inches in height and 2.5 inches in diameter were used to evaluate the assessment of spotting and filming at the end of a 2 hour and 40 minutes mechanical washing machine run. Six plates were contaminated with 10 grams of food soil. The food soil is used accordingly to the ingredients listed in the table below.
Ingredient Percentage (%)
Margarine 70
*Powdered milk 15
**Cooked Cereal 15
* Powered milk was prepared by dissolving 100 grams into 500 grams of water.
** The cooked cereal is prepared with 45 grams of cereal and 228 grams of water heated for 5 minutes.

Following the addition of the contaminant on the plates, it was allowed to sit and age for 2 hours.

A minimum of four lab personnel were used to evaluate the removal efficacy which were then averaged together for the final rating. The evaluations were based on the following scale:
The evaluations were based on the following scale:

Rating Spotting Filming
1 no spots none
2 spots at random barely perceptible
3 about ¼ of surface covered slight
4 about ½ of surface covered moderate
5 virtually completely covered heavy

Two cleaners were evaluated for spotting and filming at 15 mL and 30 mL of cleaning solution.

Chemistries Evaluated: DW-8, Cascade

Results: ProNatural Brands Automatic Dishwashing

Tester	1		2		3		4	
Cleaner-Glass #	Spotting	Filming	S	F	S	F	S	F
DW-8 15ml-1	1	1	1	2	2	1	2	3
DW-8 15ml-2	1	2	2	1	2	2	2	2
DW-8 15ml-3	1	1	1	2	2	1	2	2
DW-8 15ml-4	2	1	2	2	2	3	2	2
DW-8 15ml-5	1	1	1	2	1	2	1	2
DW-8 15ml-6	2	1	2	1	2	1	2	2
DW-8 30ml-1	3	3	3	3	4	3	3	3
DW-8 30ml-2	1	1	2	1	1	1	2	1
DW-8 30ml-3	1	3	1	2	2	3	1	2
DW-8 30ml-4	2	1	1	1	2	2	2	1
DW-8 30ml-5	2	2	1	1	2	2	2	1
DW-8 30ml-6	2	1	1	1	2	2	2	1
Cascade 15ml-1	2	1	2	2	2	2	2	2
Cascade 15ml-2	2	1	2	3	2	2	2	1
Cascade 15ml-3	3	3	3	3	1	3	2	3
Cascade 15ml-4	2	2	2	3	2	2	2	2

CLEANING LABORATORY EVALUATION SUMMARY

Cascade 15ml-5	2	1	2	2	2	2	2	2
Cascade 15ml-6	2	1	2	1	2	2	2	1
Cascade 30ml-1	1	1	1	2	1	1	1	1
Cascade 30ml-2	2	1	1	2	1	1	1	2
Cascade 30ml-3	2	2	3	2	1	2	2	2
Cascade 30ml-4	2	2	1	2	1	1	1	2
Cascade 30ml-5	2	1	2	2	2	1	2	1
Cascade 30ml-6	2	1	2	1	1	1	2	1

Summary: ProNatural Brands Automatic Dishwashing

Tester	1		2		3		4		Average	
Cleaner-Glass #	Spotting	Filming	S	F	S	F	S	F	S	F
DW-8 15ml	1.3	1.2	1.5	1.7	1.8	1.7	1.8	2.2	1.6	1.7
DW-8 30ml	1.8	1.8	1.5	1.5	2.2	2.2	2.0	1.5	1.9	1.7
Cascade 15ml	2.2	1.5	2.2	2.3	1.8	2.2	2.0	1.8	2.0	1.9
Cascade 30ml	1.8	1.3	1.7	1.8	1.2	1.2	1.5	1.5	1.5	1.5

Summary:

Substrates:	Glass/Quartz
Contaminants:	Food

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
ProNatural Brands LLC	DW-8 Automatic Dishwashwer		0.00	☑	15 ml
ProNatural Brands LLC	DW-8 Automatic Dishwashwer		0.00	☐	30 ml
Procter & Gamble	Cascade Complete (Dawn)		0.00	☐	15 ml
Procter & Gamble	Cascade Complete (Dawn)		0.00	☑	30 ml

Conclusion:

Dishwashing cleaner Cascade at 30mL was more effective at cleaning glass than DW-8 at 30mL. Cascade showed the best result when using 30mL with visual ratings of 1.54 for spotting and 1.46 for filming. When using Cascade with 15mL, results were significantly reduced with ratings of 2.04 for spotting and 1.96 for filming. Using DW-8 at 30mL and 15mL had slightly similar results averaging around 1.74 for both spotting and filming which is comparable to Cascade's results. In conclusion, DW-8 at 15mL had similar cleaning performance as Cascade at 30mL (the values were considered comparable since they were within the experimental variability) and superior cleaning performance to Cascade at 15mL.