CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2012
DateRun:	11/20/2012
Experimenters:	Jason Marshall, Jonathan Oljey
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Plastic, Steel, Porcelain
PartType:	Coupon
Contaminants:	Greases, Oil, Food
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate supplied product at a 32:1 concentration for all purpose cleaning
Experimental Procedure:	The supplied cleaning product was diluted with DI water at room temperature to vendor recommended concentration for all purpose cleaning (32:1). The second product was used at the RTU concentration. Preweighed porcelain, plastic and painted steel coupons were coated with a mixture of three cooking oils/ greases. The mix was blend of 33% vegetable shortening, 33% lard, 33% vegetable oil and 1% carbon black. Care was taken in the application of the soil onto the coupons so that light and heavy areas were avoided. The soiled coupons were allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 1-2 sprays of cleaning solutions. Each coupon was sprayed 2-3 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.
Results:	The supplied product at the 25% dilution rate was successful in removing the grease mix using manual cleaning. The porcelain substrate was a challenge for both cleaning products with 74% and 63% removal for the supplied and comparison product. When looking at the average removal for the other two substrates, the two products had more than 90% removal of the soils. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Cycle Degrease porcelain			
	0.0352	0.0069	80.40
	0.0215	0.0082	61.86
	0.0204	0.0040	80.39
Cycle Degrease painted steel			
	0.0136	0.0019	86.03
	0.0227	0.0015	93.39
	0.0151	0.0020	86.75
Cycle Degrease plastic			
	0.0412	0.0034	91.75
	0.0673	0.0003	99.55
	0.0454	0.0006	98.68
Formula 409 porcelain			
	0.0178	0.0066	62.92
	0.0368	0.0092	75.00
	0.0329	0.0160	51.37
Formula 409 painted steel			
	0.0171	0.0010	94.15
	0.0295	0.0026	91.19
	0.0325	0.0013	96.00
Formula 409 plastic			

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	0.0266	0.0022	91.73
	0.0495	0.0023	95.35
	0.0294	0.0020	93.20

Summary:

Substrates:	Plastic, Steel, Porcelain				
Contaminants:	Greases, Oil, Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Clorox Company	Formula 409 All Purpose Cleaner	100	83.43	☐	w/o porcelain 93.60
The Clean Environment Co	Cycle Degrease C-2	25	86.53	☑	

Conclusion: The supplied product was found to be effective at the 32:1 dilution for all purpose cleaning.