CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005

DateRun: 01/19/2005

Experimenters: Jason Marshall, Ephraim Massawe

ClientType: General

ProjectNumber: Project #1

Substrates: Plastic

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Mechanical Agitation

Analytical Methods: Visual

Purpose: To examine more floor strippers and follow up on the results of the previous experiment

Experimental Procedure: Six biobased cleaners were selected from the lab's inventory of biobased alternatives. The trial also included one cleaner that was non-biobased "green" floor stripper for purposes of comparison. This product (Enviro Star Green Floor Stripper) and the client's current stripper were diluted to 25% v/v in accordance with each manufacturer's recommendations. The other six products were used at full strength (100% v/v).

Twenty-four pre-weighed ceramic tiles were coated with Enviro Star Green Coating using a hand held swab. The finish was dried using a hand held heat gun for two minutes at ~300 F. Once the finish/coupon had cooled, three more coats were applied following the same procedure. Coupons were examined qualitatively to examine the dirt.

Three coated coupons in a BYK Gardner abrasion tester used to apply uniform manually cleaning. The coupons were sprayed with a cleaning product. The formulation was allowed to sit on the finish surface for 10 minutes. Rectangular pieces of stripping pads (QEP Grout Clean Up Kit Coarse Pads – normally used for floor stripping) - previously cut to fit the sizes of the coupons was placed on the cleaning sled and sprayed with the same cleaning product as the coupons. The cleaning lasted for 140 cycles (Five minutes). As manual cleaning continued an attempt was made to make the coupons wet by continuously spraying them with the floor stripper. At the end of the cleaning, the coupons were wiped once to remove any cleaner residue and dirt. Cleaning efficiencies were estimated qualitatively using a black UV light. This procedure was repeated for all 24 coupons

Results: Five products appeared to have had more than 50% cleaning efficiency on the ceramic coupons with Johnson Wax Professional having the highest efficiency at about 99.5% and followed with the Enviro Star Green Floor Stripper, both non-bio-based. The results are shown on the Table below. However, the application of the three other cleaners on the ceramic coupons yielded lower efficiencies (31.6% Solsafe 240; efficiency of 25.8% with the Soyolv Industrial; and 35% efficiency when using DBE-5).

Ceramic Coupons

Qualitative Assessment (Estimates of Removal Efficiency Qualitatively)*

Cleaning Product	Observer 1	Observer 2	Average
Enviro Star Green Floor Stripper	98.6	98	98.3
Soy Solv 11 Plus	78.6	81.6	78.2
SolSafe 245	40	23.3	31.6
Corn Solv	56.6	56.6	56.6
Soy Solv Industrial	43.3	8.3	25.8
DBE 6	81.6	55	68.6
Johnson Floor Stripper	100	100	100
DBE 5	45	35	35

* Average of three coupons

Summary:

Substrates:	Plastic				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Pioneer Eclipse	Enviro Star Green Glass & Surface Cleaner	25	98.50	☑	
	Soysolv II sovent Plus	100	80.10	☑	

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Soysolv Industrial Products					
Bio Chem Systems	Solsafe 245	100	31.60	☐	
Soysolv Industrial Products	Cornsolv industrial solvent	100	56.60	☐	
Soysolv Industrial Products	Soysolv industrial solvent	100	25.80	☐	
Invista S.a.r.l	Flexisolv DBE 6 ester	100	68.60	☑	
Johnson Wax	Pro Strip	25	100.00	☐	
Invista S.a.r.l	Flexisolv DBE 5 ester	100	35.00	☐	

Conclusion: The non-bio-based floor strippers (Johnson Wax Professional and Enviro Star Green Floor Stripper products performed well on the ceramic coupons. Three bio-based floor strippers (SoySolv 11 Plus; CornSolv and DBE-6 also performed well with efficiencies of 78.2%; 56.6% and 68.6, respectively).