CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2005
DateRun:	01/27/2005
Experimenters:	Jason Marshall, Ephraim Massawe
ClientType:	General
ProjectNumber:	Project #1
Substrates:	Ceramics, Plastic
PartType:	Coupon
Contaminants:	Waxes
Cleaning Methods:	Manual Wipe
Analytical Methods:	Black light
Purpose:	To 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 plastic composite tiles were coated with Johnson Wax Professional Show Place floor finish (40861-29-8, 78-51-3, 34590-94-8, 111-90-0) 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 reweighed to determine the amount of finish that was applied. In order to compare performance on different materials 24 other coupons of ceramic materials were also coated with the Johnson Wax Professional Show Place floor finish using the same procedure. Three coated coupons of similar materials were placed 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). At the end of the cleaning, the coupons were wiped once to remove any cleaner residue. Final weights were recorded and efficiencies were estimated qualitatively using a black UV light. This procedure was repeated for all 48 coupons.
Results:	All eight products appeared to have had more than 80% cleaning efficiency on the plastic coupons as shown on the Table below. However, the application of the cleaners on the ceramic coupons yielded results ranging from 23% (DBE-5) to 97.5 (Enviro Star Green Floor Stripper)

Plastic Coupons
Qualitative Assessment (Estimates of Removal Efficiency Qualitatively)

Cleaning Product	Observer 1	Observer 2	Average
Enviro Star Green Floor Stripper	99	99	99
Soy Solv 11 Plus	99	99	99
SolSafe 245	94	93	93.5
Corn Solv	99	99	99
Soy Solv Industrial	83	83	83
DBE 6	99	99	99
Johnson Floor Stripper	93	98	95.5
DBE 5	99	99	99

Ceramic Coupons
Qualitative Assessment (Estimates of Removal Efficiency Qualitatively)

Ceramic Coupons			
Qualitative Assessment (Estimates of Removal Efficiency Qualitatively)			
Cleaning Product	Observer 1	Observer 2	Average

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Enviro Star Green Floor Stripper	97	98	97.5
Soy Solv 11 Plus	38	47	42.5
SolSafe 245	37	45	41
Corn Solv	58	80	69
Soy Solv Industrial	62	68	65
DBE 6	43	65	54
Johnson Floor Stripper	99	99	99
DBE 5	13	33	23

Summary:

Substrates:	Ceramics, Plastic				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Pioneer Eclipse	Enviro Star Green Glass & Surface Cleaner	25	97.50	☑	Ceramic
Soysolv Industrial Products	Soysolv II sovent Plus	100	42.50	☐	Ceramic
Bio Chem Systems	Solsafe 245	100	41.00	☐	Ceramic
Soysolv Industrial Products	Cornsolv industrial solvent	100	69.00	☑	Ceramic
Soysolv Industrial Products	Soysolv industrial solvent	100	65.00	☑	Ceramic
Invista S.a.r.l	Flexisolv DBE 6 ester	100	54.00	☐	Ceramic
Invista S.a.r.l	Flexisolv DBE 5 ester	100	23.00	☐	Ceramic
Johnson Wax	Pro Strip	25	99.00	☑	Ceramic

Conclusion:

All eight products performed well on the plastic coupons but had varied effects on the ceramic coupons. The high efficiencies of the plastic coupons may have been attributed to the abrasive effects of the pads on the coupons going beyond the coatings and removing part of the coupon itself.