CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	03/18/2008
Experimenters:	Jason Marshall, Shweta Bansal
ClientType:	Electro-Optical Devices
ProjectNumber:	Project #1
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Adhesive, Fingerprints
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate selected products for the removal of adhesive and fingerprints from glass surface using manual cleaning.
Experimental Procedure:	Eight products were selected from the laboratory's web database, www.cleanersolutions.org, based on supplied information from the client. Each product was used at full strength and room temperature. In addition, the current cleaning solvent, IPA, was included for comparative purposes. Twenty-seven preweighed glass coupons were contaminated with a strip of the supplied adhesive tape. In addition, areas not covered with the tape were touched with fingers in order to add fingerprints to the surface. Coupons were weighed again to determine the amount of contamination added. Three coupons were then cleaned with each solution. Cleaning was performed by soaking a WypAll X60 reinforced paper towel with the cleaning solution. The coupons were then manually wiped for 2 minutes followed by a 10 second wipe with a dry towel. Visual observations were made and recorded during cleaning. Once dry, the coupons were weighed a final time and removal efficiencies were calculated for each product.
Results:	Five of the eight alternatives removed more adhesive than the current solvent IPA. Two products had no effect on the adhesive. Only one product, Kyzen Ionox HC2 removed all of the adhesive and fingerprints from the glass coupons. The table below lists the amount of adhesive/fingerprint added, the amount remaining and the efficiency for each coupon cleaned. Observations also are included.

Cleaner	Initial wt	Final wt	% Removed	Observations
Bio T Max	0.1417	0.0839	40.79	Removed top layer of adhesive
	0.1490	0.0508	65.91	Smudgy surface
	0.1405	0.0539	61.64	
Solsafe 245	0.1718	0.0644	62.51	Removed top layer and some of bottom layer
	0.1575	0.0348	77.90	non smudged surface
	0.1387	0.0254	81.69	
Shopmaster RC	0.1437	0.0458	68.13	Removed top layer and some of bottom layer
	0.1415	0.0523	63.04	non smudged surface
	0.1336	0.0391	70.73	
SC Actisolv	0.1496	0.0374	75.00	Good removal of top and bottom layer
	0.1655	0.0446	73.05	non smudged surface
	0.1589	0.0355	77.66	

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Optisolv OP 7171	0.1178	0.1113	5.52	No removal - top layer still sticky
	0.1459	0.1391	4.66	Smudgy surface
	0.1375	0.1305	5.09	
Ionox HC 2	0.1235	0.0000	100.00	Excellent removal
	0.1334	0.0002	99.85	required under 2 minutes (ave 1:45)
	0.1437	-0.0002	100.14	
DS 144	0.1178	0.0388	67.06	Good removal of top layer and some of bottom layer
	0.1463	0.0583	60.15	non smudged surface
	0.1080	0.0255	76.39	
DS 800	0.1611	0.1649	-2.36	No removal - top layer still sticky
	0.1427	0.1445	-1.26	non smudged surface
	0.1403	0.1457	-3.85	
IPA	0.1412	0.0445	68.48	Good removal of top layer and most of bottom layer
	0.1454	0.0475	67.33	non smudged surface
	0.1625	0.0723	55.51	

Summary:

Substrates:	Glass/Quartz				
Contaminants:	Adhesive, Fingerprints				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	56.11	☐	
Bio Chem Systems	Solsafe 245	100	74.04	☑	
Buckeye International	Shopmaster RC	100	67.30	☑	
Gemtek Products	SC Actisolv Safety Solvent	100	75.24	☑	
Kyzen Corporation	Optisolv OP7171	100	5.09	☐	
Kyzen Corporation	Ionox HC 2	100	100.00	☑	
Dysol	DS 144S Wipe Solvent	100	67.87	☑	
Dysol	DS 800 Solvent	100	-2.49	☐	
Fisher Scientific	Isopropanol a459-4 70% VV (CAS: 67-63-0)	100	63.77	☑	Current solvent

Conclusion:

The five products removing more than the current solvent will be evaluated under conditions more closely matching the current cleaning practice (residual adhesive removal only). Odor comparisons also will be conducted to determine comparisons to IPA.