CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2011

DateRun: 03/07/2011

Experimenters: Heidi Wilcox, Junhee Cho, Johnny Le

ClientType: Optical Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Coatings

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To find a substitute for Acetone

Experimental Procedure: Four products were selected from the lab's on-line database, www.cleanersolutions.org, based on past testing results matching client supplied information. All products were used at full strength in 600 ml beakers. Each solution used at room temperature in a Crest 40 kHz ultrasonic tanked filled with water and degassed for 5 minutes prior to cleaning.

Sixteen pre-weighted coupons were coated with supplied photo resist from company using a hand held swap. Each coupon was coated 3 times manually.
Coupons were allowed to sit overnight and reweighed to determine the amount of resin applied.
Three coupons were immersed into each solution at room temperature for 5 minutes using ultrasonic energy. Following cleaning, coupons were rinsed in a tap water bath for 15 seconds then dried using compressed air at room temperature for 60 seconds. Final clean weights were recorded and cleaning efficiencies were calculated for each product.

Results: Two cleaners resulted in more than 90% removal of the contaminant. The table below shows the amounts of soil added and removed by each cleaning solution.

Gravimetric Table

Cleaner	Initial wt	Final wt	% Removed
Bio T Max			
	0.1532	0.1272	16.97
	0.1663	0.1428	14.13
	0.1682	0.1027	38.94
Solsafe 245			
	0.2324	0.0491	78.87
	0.1931	0.0411	78.72
	0.1586	0.0336	78.81
Ez Solv			
	0.2522	0.0186	92.62
	0.2052	0.0147	92.84
	0.1675	0.0098	94.15
Biosolv			
	0.1384	0.0008	99.42
	0.1935	0.0203	89.51
	0.2229	0.0084	96.23

Summary:

Substrates:	Aluminum				
Contaminants:	Coatings				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	23.35	☐	
Bio Chem Systems	Solsafe 245	100	78.80	☐	
Gemtek Products	SC EZ Solv Safety Solvent	100	93.20	☑	
Phoenix Resins Inc	BioSolv	100	95.05	☑	

Conclusion: Ez Solv and Bio Solv products were successful in removing the photo resist in five minutes of ultrasonic cleaning.