CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001

DateRun: 09/18/2001

Experimenters: Jason Marshall

ClientType: Electronics Manufacturer

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Abrasive

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Evaluating cleaners for removal.

Experimental Procedure: Ten cleaners were selected based on previous trials and lab databases. Solutions that were not used at full strength were diluted to the specified concentrations using DI water in 250 ml beakers. All solutions were heated to 120 F on a hot plate. Thirty preweighed coupons were coated with the supplied slurry and allowed to dry for 2 hours. These coupons were then weighed again. Three coupons were immersed into each beaker to be cleaned for 5 minutes. After the cleaning, the coupons were rinsed in DI water and dried using air blow off. Coupons were then weighed a final time and percent efficiencies were calculated for each cleaner.

Nalco Chemical Co Nalco 2350 Polishing Slurry

Results: All of the full strength cleaners, DS 108, Safe Strip, Uni-Clear were not very effective in removing the slurry from the ceramic coupons. These three cleaners removed less than 70%. The five best cleaners, Amberclean, LPS, ND 17, Polyspray and Safety First removed 95% or better of the slurry. Micro 90 and Inproclean removed around 90% of the contaminant during the five minutes of cleaning. The following table lists the calculated efficiencies for each cleaning solution.

Cleaner	Coupon 1	Coupon 2	Coupon 3	Average	Std Dev
DS 108	64.07	54.05	50.07	56.06	7.22
Safe Strip	25.60	49.06	34.79	36.49	11.82
Amberclean	97.45	98.23	98.82	98.17	0.69
Micro 90	86.97	86.84	88.27	87.36	0.79
LPS	93.56	97.90	98.54	96.67	2.70
ND 17	96.49	96.75	93.27	95.51	1.94
Inproclean	74.46	91.80	97.90	88.06	12.16
Uni-Clear	82.67	68.98	59.28	70.31	11.75
Polyspray	82.81	96.00	99.47	92.76	8.79
Safety First	97.38	99.07	99.29	98.58	1.04

Summary:

Substrates:	Ceramics				
Contaminants:	Abrasive				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Dysol	DS 108 Wipe Solvent	100	56.06	☐	
EcoLink	Safe Strip	100	36.49	☐	
Innovative Organics Inc	Amberclean L 12	5	98.17	☑	
International Products Corporation	Micro 90 Conc.	5	87.36	☑	
LPS Laboratories	Precision Clean Concentrate	5	96.67	☑	
MacDermid Industrial Products	ND 17	5	95.51	☑	
Oakite Products	Inproclean 3800	5	88.06	☑	
Universal Photonics	Uni Clear	100	70.31	☐	
US Polychem Corporation	Polyspray Jet 790 XS	5	92.76	☑	
Amax Corporation	Safety First	15	98.58	☑	

Conclusion:

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The seven cleaners that removed over 85% of the contaminant will be reevaluated with a longer cleaning time.