

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2001  
 DateRun: 09/19/2001  
 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:

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

Conclusion:

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