CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 01/26/2003

Experimenters: Jason Marshall

ClientType: Manufactures parts for Semi-Conductor Industry

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate products from previous trial on second supplied wax

Experimental Procedure: Three products were selected from the laboratories database of testing results based on client supplied data. Three other products were also selected based on being successful in removing bees wax in the previous trial.
One product was diluted to 20% using DI water in a 600 ml beaker as recommended by the vendor. In addition, five semi-aqueous products were used at full strength in 600 ml beakers. The products were heated to 130 F on a hot plate. Eighteen preweighed ceramic coupons were coated with client supplied Roger Reed 9805 wax. The wax was first melted using a Master Appliance heat gun in a beaker and applied to the coupons using a swab. The coupons were allowed to cool to room temperature before weighing a second time. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. Coupons were rinsed in tap water for 15 seconds at 120 F, followed by air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: Three of the six products, Opti Clear, Citrikleen XPC and Bio T 200 A, were successful in removing over 80% of the wax during the 5 minute immersion cleaning. Citraburst 7 removed just over a third the wax, but showed signs of lifting the wax off of the coupons. The USA Wash product created a film across the surface of the coupons resulting in a negative percent removal. The table below list the amount of wax added and removed for each product.

Table 1. Wax Removal

Cleaner	Initial wt	Final wt	% Removed
Opti Clear	0.4409	0.0045	98.98
	0.5374	0.0419	92.20
	0.5298	0.0581	89.03
Citraburst 7	0.5101	0.3697	27.52
	0.3909	0.2558	34.56
	0.3150	0.1683	46.57
Citrikleen XPC	0.4610	0.0877	80.98
	0.5064	0.0996	80.33
	0.5173	0.0776	85.00
DBE	0.5309	0.5043	5.01
	0.5117	0.4907	4.10
	0.3832	0.3532	7.83
Bio T 200 A	0.4606	0.0283	93.86
	0.5700	0.0775	86.40
	0.4549	0.0181	96.02
USA Wash	0.4688	0.5142	-9.68
	0.3536	0.3984	-12.67
	0.4554	0.3624	20.42

Summary:

Substrates:	Ceramics				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
National Diagnostic	Opti Clear	100	93.41	☑	
Florida Chemical Company	Citrus Burst 7	100	36.22	☐	
Pentone Corporation	Citrikleen XPC	100	82.10	☑	

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Invista S.a.r.l	Flexisolv DBE Ester	100	5.65	☐	
Bio Chem Systems	Bio T 200 A	100	92.09	☑	
Nensco	USA Wash	20	-0.64	☐	

Conclusion: The three cleaners that removed over 80% of the 98045 Wax from Roger Reed will be used on the third supplied wax. In addition, the Citriburst 7 will also be used due to its success in the previous trial.