CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2009
DateRun:	09/16/2009
Experimenters:	Jason Marshall, Junhee Cho, Scott Nadolna
ClientType:	Biomedical Device Manufacturer
ProjectNumber:	Project #1
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Waxes
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate various aqueous products for wax removal from glass coupons using immersion cleaning.
Experimental Procedure:	Eight products were selected from the lab's on-line database, www.cleanersolutions.org, based on past testing results matching client supplied information. Two client supplied products were included for testing as well for comparative purposes. All of these products were diluted to 5% using DI water in 500 ml beakers. All eight products were heated to 130 F on a hot plate. Thirty preweighed glass coupons were coated with Universal Photonics Unibond 5.0 wax by heating the wax with a Master Appliance Heat Gun and smearing the melted wax across the glass coupons. Dirty weights were recorded. Three coupons were cleaned in each product for five minutes using minimal agitation. Coupons were rinsed in a tap water bath at 120 F and dried using compressed air at room temperature. Final weights were recorded and efficiencies were calculated.
Results:	Some of the coupons were found to gain weight after immersion cleaning. This was due to the cleaning solutions becoming embedded in the wax/adhesive on the coupons, causing the wax to swell. The cleaning solutions remained in the wax after rinsing and drying resulting in the increased weight or negative cleaning efficiencies. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
SC Aircraft & Metal cleaner	0.4036	0.3360	16.75
	0.5482	0.4463	18.59
	0.4294	0.3186	25.80
Texolite 1734 XL	0.3587	0.3165	11.76
	0.4427	0.3843	13.19
	0.5200	0.4648	10.62
Amber clean L12	0.7237	0.8293	-14.59
	0.7016	0.9227	-31.51
	0.4827	0.5594	-15.89
Amber clean Q3	0.6280	0.7608	-21.15
	0.6583	0.6961	-5.74
	0.9025	1.0899	-20.76
Micro 90	0.6537	0.5877	10.10
	0.6962	0.7591	-9.03
	0.8541	0.9224	-8.00
Inproclean 3800	0.7581	0.5201	31.39
	0.6772	0.4639	31.50
	0.6551	0.4326	33.96
SC 1000	0.8162	1.2507	-53.23
	0.7149	1.0166	-42.20
	0.7513	1.1821	-57.34
Polychem 2000 P	1.0430	1.2878	-23.47
	0.7890	0.9644	-22.23
	0.6715	0.9168	-36.53
Valtron SP2200	0.5066	0.6067	-19.76
	0.5736	0.7216	-25.80
	0.9725	1.1765	-20.98

CLEANING LABORATORY EVALUATION SUMMARY

Contrad 70	0.5032	0.1546	69.28
	0.5725	0.0614	89.28
	0.7385	0.0020	99.73

Summary:

Substrates:	Glass/Quartz
Contaminants:	Waxes

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	20.38	☐	
Texo Corporation	Texolite 1734 XL	5	11.86	☐	
Innovative Organics Inc	Amberclean L 12	5	-20.67	☐	
Innovative Organics Inc	Amberclean Q3	5	-15.88	☐	
International Products Corporation	Micro 90 Conc.	5	-2.31	☐	
Oakite Products	Inproclean 3800	5	32.29	☑	
Gemtek Products	SC 1000 Aqueous Cleaner Concentrate	5	-50.93	☑	
US Polychem Corporation	Polychem A 2000 P	5	-27.41	☐	
Valtech Corporation	Valtron SP 2200	5	-22.18	☐	
Decon Laboratories Inc	Contrad 70	5	86.09	☑	

Conclusion:

Many of the products were found to have some effect on the wax/adhesive even though the efficiencies were all less than 50% removal. A follow up test will be conducted using ultrasonic cleaning.