CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2009
DateRun:	10/04/2009
Experimenters:	Junhee Cho, Khoa Pham
ClientType:	Biomedical Device Manufacturer
ProjectNumber:	Project #1
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Waxes
Cleaning Methods:	Ultrasonics
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate top performing products using heated ultrasonic cleaning for wax removal.
Experimental Procedure:	Eight cleaners were selected from the previous trial based on effective cleaning of the wax. Seven aqueous cleaners were diluted to 5% using DI water in 600 ml beakers. One powder cleaner (Uniclean KC 3000) was diluted to 2% using DI water in 600 ml beaker. All eight cleaners were heated to 150 F in a Crest 40 kHz Ultrasonic tank filled with water. Twenty-four preweighed glass coupons were coated with wax by heating the coupons with a Master Appliance heat gun and wiping solid wax across the surface. Once coupons were cooled, a second weight was recorded. Three coupons were cleaned in each solution. All cleaners were used for 10 minutes. Following cleaning, the coupons were rinsed in a DI water spray at 60 F for 15 seconds and dried one day at room temperature. Final weights were recorded and efficiencies were calculated. Observations were made on bath conditions following cleaning to determine which products could be reused more effectively.

Results:

Cleaner	Initial wt	Final wt	% Removed	Bath life observation
Valtron sp 2200 5%	0.369	0.0001	99.97	wax lump is located on bottom
	0.3781	-0.0002	100.05	
	0.4813	0.0003	99.94	
Contrad 70 5%	0.5945	0.0035	99.41	wax was dissolved in cleaner
	0.5682	0.0065	98.86	
	0.7296	0.0067	99.08	
Uniclean - kc3000 2%	0.8632	0.0072	99.17	wax layer is located on the surface of cleaner
	0.8536	-0.0004	100.05	
	0.6926	0.0126	98.18	
Polychem 2000p 5%	0.8153	0.0106	98.70	wax was dissolved in cleaner
	0.7273	-0.0010	100.14	
	0.4025	0.0000	100.00	
Inproclean 3800 5%	0.5235	-0.0009	100.17	wax was dissolved in cleaner
	0.6236	-0.0016	100.26	
	0.4138	0.0073	98.24	
Valtron dpan031 5%	0.5398	0.0002	99.96	wax lump is relatively bigger
	0.4787	0.0035	99.27	and it is located on bottom

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	0.3221	0.0000	100.00	
Daraclean 212 5%	0.3534	-0.0002	100.06	wax was dissolved in cleaner
	0.4252	0.0003	99.93	
	0.4596	-0.0005	100.11	
Daraclean 235 5%	0.3131	0.0011	99.65	wax made a mass and layer which is
	0.4669	-0.0005	100.11	on the surface of cleaner
	0.4737	-0.0013	100.27	

Summary:

Substrates:	Glass/Quartz
Contaminants:	Waxes

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Valtech Corporation	Valtron SP 2200	5	99.99	☑	
Decon Laboratories Inc	Contrad 70	5	99.12	☑	
US Polychem Corporation	Polychem A 2000 P	5	99.61	☑	
Oakite Products	Inproclean 3800	5	99.56	☑	
Valtech Corporation	Valtron DP 97031	5	99.74	☑	
Magnaflux	Daraclean 212	5	100.03	☑	
Magnaflux	Daraclean 235	5	100.01	☑	
Universal Photonics	Uni Clean 9.0-KC3000	2	99.13	☑	

Conclusion: The ultrasonic cleaning was successful for all cleaners. All products will be tested on supplied dirty parts.