CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002

DateRun: 08/05/2002

Experimenters: Jason Marshall

ClientType: Chemical Company

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Fluxes, Resins/Rosins, Solder

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To find replacement cleaners for third contaminant

Experimental Procedure: Five products were selected from the laboratory's database of product testing based on client supplied information. Two additional products were selected from the previous trials. Five of the seven products were used at full strength and the other two were diluted to 10% using DI water. All seven products were degassed for 5 minutes in a Crest 40 kHz ultrasonic tank at room temperature. Twenty-one preweighed coupons were coated with Emerson & Cuming Eccobons Solder 59C (7440-22-4, 108-88-3, Silicone Resin) using a hand held swab. Coupons were sat for 2 hours and were reweighed. Three coupons were cleaned in each solution for 5 minutes using the ultrasonic energy. Coupons were rinsed for 15 seconds in tap water at room temperature and dried using air knives also at room temperature. Final weights were recorded and efficiencies were calculated.

Results: Four of the products tested, both the Bio Chem System and Dynamold products, were very successful in removing nearly all of the coating from the coupons. The table below lists the efficiencies for each coupon cleaned.

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed
Bio T Max	0.5124	0.0105	97.95
	0.3544	0.0035	99.01
	0.3366	0.0029	99.14
SolSafe 245	0.1616	0.0029	98.21
	0.365	0.0259	92.90
	0.1155	0.0033	97.14
DS 104	0.4898	0.0320	93.47
	0.1052	-0.0002	100.19
	0.1727	-0.0008	100.46
DS 108	0.1353	-0.0001	100.07
	0.1804	-0.0003	100.17
	0.2117	0.0364	82.81
Natural Solutions	0.3496	0.3250	7.04
	0.4885	0.4861	0.49
	0.4698	0.4732	-0.72
DBE	0.2742	0.2565	6.46
	0.3990	0.3937	1.33
	0.1793	0.1736	3.18
Armakleen E 2001	0.5053	0.4996	1.13
	0.3839	0.3718	3.15
	0.1176	0.1055	10.29

Summary:

Substrates:	Aluminum				
Contaminants:	Fluxes, Resins/Rosins, Solder				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	98.70	☑	
Bio Chem Systems	Solsafe 245	100	96.08	☑	

CLEANING LABORATORY EVALUATION SUMMARY

Dysol	DS 104 Wipe Solvent	100	98.04	☑	
Dysol	DS 108 Wipe Solvent	100	94.35	☑	
Equinox Products	Natural Solutions	10	2.27	☐	
Church & Dwight Co Inc.	Armakleen E 2001	10	4.86	☐	
Invista S.a.r.l	Flexisolv DBE Ester	100	3.65	☐	

Conclusion: The four successful cleaners will be used to clean the next contaminant under similar conditions.