CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 02/14/2000

Experimenters: Jason Marshall, Nicole Vayo

ClientType: Mfr Boating Accessories

ProjectNumber: Project #3

Substrates: Plastic, Electronics

PartType: Coupon

Contaminants: Fluxes, Solder

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To further evaluate selected cleaners for the removal of the solder flux.

Experimental Procedure: Three cleaners were selected from the previous trial. The two concentrations were used for each. The two aqueous products were diluted with DI water to 10 and 20% by volume in a 600 ml beaker. The other product was used at 10 and 100%. The four aqueous mixes were heated to 130 F on a hot plate. Sixteen preweighed coupons were coated with the supplied flux and weighed again. Three coupons were cleaned in the two aqueous solutions and two coupons were cleaned in the semi aqueous solution for five minutes at using stir-bar agitation. After cleaning the coupons were rinsed for 15 second in tap water at 120 F and dried using a Master Appliance Corp, Hot-air gun model HG-301A at 500 F for one minute. Following the drying, final clean weights were recorded and efficiencies were calculated.

SUBSTRATE MATERIAL: Circuit Board coupons
CONTAMINANTS: Flux-Kester Solder 1544 Rosin Solder flux (CAS#s: 64-17-5, 78-92-2, 8050-09-7)
CONTAMINATING PROCESS USED: Coupons were coated with oil using a hand held swab.

Results: The Bio T Max at full strength and SWR One at 20% were both effective in removing a majority of the contamination from the circuit boards. The other dilutions and the other product cleaned less than half of the flux from the surface. Table 2 list the calculated results for the various products and dilutions.

Table 2. Cleaning Efficiencies

Cleaner	Bio T 100	Bio T 10	SWR 10	Val 20	SWR 20*	Val 10*
Coupon 1	98.55	7.40	80.01	34.53	89.07	63.82
Coupon 2	93.37	15.28	83.49	57.87	91.58	52.71
Coupon 3			84.34	57.13	83.32	9.45
Average	95.96	11.34	82.61	49.84	87.99	41.99

*Contaminated weights were not recorded. The average amount of contaminant was used in place to calculate the efficiency of cleaning. These two values are only approximate cleaning effectiveness. Visual observations were made to verify the calculated results. Visually the SWR 20 appeared to remove nearly all of the contamination, where as the Val 10 looked less clean than the Val 20.

Summary:

Substrates:	Plastic, Electronics				
Contaminants:	Fluxes, Solder				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	95.96	☑	
Bio Chem Systems	Bio T Max	10	11.34	☐	
SWR Corporation	SWR One	10	84.34	☑	
SWR Corporation	SWR One	20	83.32	☑	
Valtech Corporation	Valtron SP 2250 2LF	10	9.45	☐	
Valtech Corporation	Valtron SP 2250 2LF	20	57.13	☐	

Conclusion: SWR Corp SWR One and Envirosolutions Bio-T Max were both successful in removing the flux from the circuit board coupons. Testing will be performed on the various supplied inks.