CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 02/06/2000

Experimenters: Jason Marshall

ClientType: Mfr Boating Accessories

ProjectNumber: Project #3

Substrates: Plastic, Electronics

PartType: Coupon

Contaminants: Fluxes, Solder

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

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

Experimental Procedure: Five cleaners were selected from the previous trial. Three solutions were diluted with DI water to five percent by volume in a 600 ml beaker. The other two products were diluted to 10% as suggested by the vendor. All eight solutions were heated to 130 F on a hot plate. Fifteen preweighed coupons were coated with the supplied flux and weighed again. Three coupons were cleaned in a solution for five minutes at room temperature 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: Only SWR Corp and Envirosolutions were effective in removing over 85% of the flux from the coupons. Valtech removed just over 75% with the other two cleaners cleaning less than 35%. Table 2 lists the calculated contaminant removal rates for each cleaner tested.

Table 2. Cleaning Efficiencies

Cleaner	Chrisal	SWR Corp	Valtech	Oakite	Envirosolutions*
Coupon 1	23.18	86.30	72.53	2.66	93.43
Coupon 2	45.74	83.35	80.66	10.08	99.39
Coupon 3	35.45	87.81	72.57	70.95	95.99
Average	34.79	85.82	75.25	27.90	96.27

As noted in the table, when Envirosolutions Bio-T Max was heated at the 10% dilution, a white particulate matter was formed. Rinsing this white material off the coupons was some what difficult and a second tap water spray was used for 20 seconds.

Summary:

Substrates:	Plastic, Electronics				
Contaminants:	Fluxes, Solder				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Chrisal USA Inc	Super CMF 240	5	34.79	☐	
SWR Corporation	SWR One	5	85.82	☑	
Valtech Corporation	Valtron SP 2250 2LF	5	75.25	☐	
Oakite Products	Inproclean 4000 T	10	27.90	☐	
Bio Chem Systems	Bio T Max	10	96.27	☑	

Conclusion: SWR Corp SWR One and Envirosolutions Bio-T Max were both moderately successful in removing the flux from the circuit board coupons. A follow test will be conducted to evaluate SWR Corp and Valtech at higher concentrations (10%) and Bio-T Max at room temperature.