CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002

DateRun: 10/07/2002

Experimenters: Jason Marshall

ClientType: Electromagnetic Manufacturer

ProjectNumber: Project #4

Substrates: Aluminum

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To re-evaluate successful products at higher concentration

Experimental Procedure: Three products from the previous trial were diluted to 10% using DI water in 600 ml beakers. Each solution was heated to 130 F on a hot plate, followed by a 5 minute degassing in a Crest 40 kHz ultrasonic tank. Twelve preweighed coupons were coated with Fuchs Lubricants Co Renodraw 12 using a hand held swab. A glass rod was then used to ensure a thin, evenly distributed layer of lubricant, more closely matching actual operating conditions. Coupons were then reweighed using a Denver Instruments A250 Balance.

Three coupons were cleaned for 8 seconds in a cleaning solution, followed by an 8 second ultrasonic tap water bath rinse. Coupons were dried using air blow off at room temperature for 10 seconds. Once coupons were dry, final weights were measured and efficiencies were calculated.

Results: The increase in concentration caused the efficiencies for two of the products to decrease. Surface Cleanse 930 actually gained weight due to the thickness of the cleaning product. Only Inproclean 3800 resulted in an effective removal of the contaminant. Table 1 lists the amount of contaminant added and removed.

Table 1. Cleaning Efficiencies

Cleaner	Initial wt	Final wt	% Removed
EXP 1400	0.0324	0.0079	75.62
	0.0544	0.0125	77.02
	0.0632	0.0214	66.14
Surface Cleanse	0.1173	0.0750	36.06
	0.0533	0.0822	-54.22
	0.0518	0.0809	-56.18
Inproclean 3800	0.0367	0.0005	98.64
	0.0258	0.0002	99.22
	0.03	0.0004	98.67

Summary:

Substrates:	Aluminum				
Contaminants:	Lubricating/Lapping Oils				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Aquavantage 1400	20	72.93	☐	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	20	-24.78	☐	
Oakite Products	Inproclean 3800	20	98.84	☑	

Conclusion: Only Inproclean showed improvements at 20% concentration. The other two products, EXP 1400 and Surface Cleanse, worked better at the 10% concentration, removing over 93% of the lubricant.