CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 07/12/2000

Experimenters: Jason Marshall

ClientType: Bellows Mfr

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To identify safer cleaning solvent for removing oil, lubricant and grease from sub assemblies.

Experimental Procedure: Eight cleaners were selected from the lab's database of effective cleaning and vendor supplied information. All were diluted to 5% by volume using DI water in 600 ml beakers and heated to 130 F on a hot plate. Twenty-four preweighed coupons were coated with the Elf Cut 51 oil using a swab and weighed a second time. Three coupons were immersed in a solution agitated with a magnetic stir bar. Cleaning lasted for 5 minutes and was followed by a 30 second rinse with tap water at 120 F. Drying was performed with a Master Appliance Corp, Hot-air gun model HG-301A for one minute at 500 F. Coupons were weighed a final time and cleaning efficiencies were calculated.

SUBSTRATE MATERIAL: Aluminum Coupons
CONTAMINANTS: Elf Lubricant North America Elf Cut 51 (64742-53-6, 64742-52-5, 63449-39-8,8016-28-2)
CONTAMINATING PROCESS USED: Lubricant applied using hand held swab

Results: Four cleaners (Heatbath, Today & Beyond, United Laboratories and W.R. Grace) removed over 95% of the oil from the coupons. All but one cleaner averaged over 80% removal of the Elf Cut 51 oil. United Laboratories had the highest efficiency, 99.7%. Table 2 lists the calculated data for the eight cleaners.

Table 2. Calculated Cleaning Effectiveness

Cleaners	AW Chesterton	Buckeye	Heatbath	Savogran	T&B	United	W.R. Grace	Watson
Coupon 1	93.15	81.3	98.72	92.92	97.87	99.51	96.22	78.28
Coupon 2	65.22	84.96	93.48	77.91	96.77	99.81	96.54	85.27
Coupon 3	67.57	79.89	97.62	94.44	99.1	99.81	93.12	89.1
Average	75.31	82.05	96.61	88.43	97.91	99.71	95.29	84.22

Summary:

Substrates:	Aluminum
Contaminants:	Lubricating/Lapping Oils

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AW Chesterton	217 Pressure wash	5	75.31	☐	
Buckeye International	Shopmaster	5	82.05	☐	
Heatbath Corporation	Multi-Kleen 1568	5	96.61	☑	
Savogran Company	Dirtex Prepaint Cleaner	5	88.43	☐	
Today & Beyond	Beyond 2001	5	97.91	☑	
United Laboratories International	United 450 All Clear	5	99.71	☑	
Magnaflux	Daraclean 200	5	95.29	☑	
Watson Technical Associates	Watson Formula 7300	5	84.22	☐	

Conclusion: The four cleaners above 95% removal will be used in the next phase of testing which will use ultrasonic energy. The contaminant will switch to the Cello-Seal.