CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2004
DateRun:	03/14/2004
Experimenters:	Jason Marshall
ClientType:	Aircraft Parts Manufacturer
ProjectNumber:	Project #2
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Cutting/Tapping Fluids
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate longer cleaning time without rinsing
Experimental Procedure:	Four cleaners were selected from previous trial. Three aqueous based cleaners were diluted to 10% using DI water in 600 ml beakers. One semi-aqueous product was used at 50% diluted with DI water. All of the products were heated to 120 F on a hot plate. Twelve preweighed aluminum coupons were coated with the second client supplied oil, Castrol Moly Dee Tapping Fluid. The oil was applied to coupons using a swab and then heated for 10 minutes using a Master Appliance heat gun. The coupons were allowed to cool to room temperature before weighing a second time. Three coupons were cleaned in each solution for 10 minutes using stir-bar agitation. Coupons were not rinsed but were dried using air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.
Results:	Cleaning the soiled coupons for a longer time without rinsing was equal to the cleaning at five minutes with a rinse for all four products. The table lists the amount of soil initially added, the amount remaining after cleaning and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
815 GD	0.2238	0.0618	72.39
	0.5161	0.0770	85.08
	0.8064	0.2130	73.59
Metalnox M6314	1.0076	0.1547	84.65
	0.8464	0.1180	86.06
	0.9557	0.1098	88.51
Hurrisafe 9450	0.7028	0.1164	83.44
	0.7693	0.0831	89.20
	0.8761	0.0455	94.81
Bio T 300 B	0.7309	0.0061	99.17
	0.7656	0.0104	98.64
	0.7574	0.0099	98.69
815 GD	0.6043	0.0001	99.98
	0.4247	-0.0001	100.02
	0.5094	0.0001	99.98
Metalnox M6314	0.5104	0.0273	94.65
	0.5762	0.0126	97.81
	0.6401	0.1132	82.32
Hurrisafe 9450	0.6360	0.0155	97.56
	0.8197	0.0051	99.38
	0.5099	0.0075	98.53
Bio T 300 B	0.6065	0.0031	99.49
	0.5907	0.0065	98.90
	0.4515	0.0071	98.43

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

CLEANING LABORATORY EVALUATION SUMMARY

Brulin Corporation	Formula 815 GD	10	77.02	☐	76.02 with rinsing at 5 min
Kyzen Corporation	Metalnox M6314 (For Comparison Only)	10	86.41	☑	83.95 with rinsing at 5 min
PCI of America	Hurrisafe 9450	10	89.15	☑	88.26 with rinsing at 5 min
Bio Chem Systems	Bio T 300 B	50	98.83	☑	99.82 with rinsing at 5 min

Conclusion: These four products will be tested using ultrasonic cleaning with rinsing.