CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 07/12/1998

Experimenters: Jason Marshall

ClientType: Aluminum Job Shop

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Black light, Gravimetric

Purpose: To find a cleaner to replace their current use of Aliphatic Petroleum Distillates

Experimental Procedure: Six cleaning chemistries were selected from the Lab's databases based on past use and vendor information. Five percent solutions were made into 500 mL beakers using DI water. Each cleaner was heated to 130 F on a hot plate. Eighteen pre-weighed coupons were over contaminated with the oil using a hand-held swab. The contaminated coupons were weighed again. Three coupons were placed into each cleaner for 5 minutes with stir-bar agitation. Parts were rinsed in tap water at 120 F for 30 seconds. After the coupons air dried, final weights were measured. Coupons were then viewed under a black light.

SUBSTRATE MATERIAL: Al #202-3003 H-14
CONTAMINANTS: Oil

Results: With the amount of contaminant remaining on all coupons, the requested analysis of the cleanliness was limited to gravimetric and black light fluorescence. Table 1 list the cleaning efficiencies of the six cleaners selected.

Table 1. Cleaning Efficiencies 5%

	Simple Green	Safe CleanUp	Calgon	WR Grace	Oakite	EMKAY
Coupon 1	79.6	56.7	79.7	97	54.1	59.6
Coupon 2	81.9	53.1	82	67	64.8	63.9
Coupon 3	79.9	58.6	75.4	80.8	64.8	51.9
Ave	80.5	56.1	79	81.6	61.2	58.5
Std Dev	1.25	2.79	3.35	15	6.18	6.08

Three cleaners had moderate success in removing the oil from the coupons. Increasing the time or the concentrations may improve the cleaning efficiencies of the cleaners. Simple Green, Calgon and WR Grace products will be tested in the next experiment.

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Simple Green	Concentrated Industrial Strength Cleaner and Degreaser	5	80.50	☑	
Safe CleanUp Solutions	Super Neutral	5	56.10	☐	
Magnaflux	Daraclean 282	5	81.60	☑	
Oakite Products	Inproclean 3800	5	61.20	☐	
Emkay Chemical Company	Safety Wash CRC	5	58.50	☐	
Calgon Corporation	Geo Guard 2215	5	79.00	☑	

Conclusion: Despite being unable to conduct all of the requested analysis techniques, three cleaners were determined to have moderate cleaning efficiencies. These three cleaners will be tested again using two variations to the experimental procedures. The first will be to run the experiment for 15 minutes and the second will be to run for the 5 minutes but using a higher cleaner concentration.