CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 07/22/1998

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, Waterbreak

Purpose: Evaluate semi-aqueous cleaners

Experimental Procedure: Five different chemistries were selected from the laboratories databases based on previous uses and vendor information. Chemistries were used full strength at room temperature. Ten pre-weighed coupons were over contaminated with the oil using a hand-held swab. The contaminated coupons were weighed again. Two 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. Water break and fluorescence analysis were conducted on the coupons.

The water break test involved submerging a coupon into a beaker with DI water at room temperature. The coupon was slowly removed from the beaker and the water run off was observed. A non-contaminated coupon was tested to obtain a base-line level of cleanliness. Each contaminated coupon was compared to the base-line sample. For the fluorescence test, the coupons were observed after they were contaminated and after they were cleaned. Coupons were placed into a black light chamber; the light source was turned on and observations were made. The before and after cleaning observations were compared.

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

Results: Of the five chemistries selected, only two were effective in removing large amounts of the contaminant. Ecolink's Vortex and Occidental's Oxsol 100 both removed over 97% of the oil. Table 1 lists the results of the gravimetric and fluorescent analysis.

Table 1. Cleaning Efficiencies

	Ecolink Vortex		Oxsol 100	
	Gravimetric	Black Light	Gravimetric	Black Light
	99.7	fingerprints	97.8	spots on top
	99.7	edges	98.0	speckled
Average	99.7		97.9	
Std Dev	0		0.14	

When the water break test was used to compare the cleaned coupons to a virgin coupon, no differences were observed. Information for the two products has been included along with coupons that were successful cleaned. Coupons 9 & 11 were cleaned with Vortex and 8 & 15 with Oxsol 100.

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Tarksol Inc	Tarksol HTF-50	100	14.06	☐	
Tarksol Inc	Tarksol HTF 85 B	100	19.23	☐	
Oakite Products	Inproclean 4000 T	100	52.00	☐	
EcoLink	Vortex	100	99.69	☑	
Occidental Chemical Corporation	OXSOL 100	100	97.90	☑	

Conclusion: When the water break test was used to compare the cleaned coupons to a virgin coupon, no differences were observed. Information for the two products has been included along with coupons that were successful cleaned. Coupons 9 & 11 were cleaned with Vortex and 8 & 15 with Oxsol 100.