CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 06/21/1998

Experimenters: Jason Marshall

ClientType: State Highway Department

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

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

Cleaning Methods:

Analytical Methods: Gravimetric

Purpose: Compare selected cleaners to current cleaner

Experimental Procedure: The 3 oils were selected in order to match the contaminants encountered by the client. Table 1 list CAS #s of the 3 oils and compares them to the client oils.

Table 1 CAS#'s of Selected Oils.

NAME	CAS #	GEAR OIL	TRACTOR	MOTOR
Citgo Sliderite 220	64742-52-5			
	64742-01-4	X		
	64742-62-7	X		
Citgo Cutting	64741-89-5		X	
Oil 120	64742-65-0		X	
Citgo Cutting	64742-65-0		X	
Oil 425	64741-88-4	X	X	X
	64741-89-5		X	
	64742-54-7		X	X

Each oil was applied to pre-weighed aluminum coupon. The coupons were placed in an oven for 20 minutes at 160 F. Coupons were allowed to cool to room temperature and weighed again. Three coupons were placed in each cleaner for two minutes with stir bar agitation at room temperature. Coupons were then rinsed in tap water for 30 seconds also at room temperature. Parts air dried and then weighed one more time.

SUBSTRATE MATERIAL: Al-202-6061 T-4
CONTAMINANTS: Citgo Cutting Oils 425 & 120, Sliderite 220
CONTAMINATING PROCESS USED: Applied the oils using a swab.

Results: All six of the chemistries cleaned very well. The Daraclean product had a dramatic increase in efficiency when compared to the previous trials. The other products tested were consistent with the results from the other trials. Table 2 lists the cleaning efficiencies from this trial and Table 3 compares results obtained in the other experiments.

Table 2. Cleaning Efficiencies from Trial 4

	Safety Kleene	Soy Gold	SolSafe	Daraclean	SuperNeutral	Zep Dyna
Coupon 1	99.8	88.9	95.1	99.3	99.1	99.7
Coupon 2	99.9	90.1	96.8	99.5	98.3	99.8
Coupon 3	99.9	90.2	96.8	99.3	95.9	99.7
Ave	99.9	89.7	96.2	99.4	97.8	99.7

Table 3. Average Percent Removal From All Testing

Trial #	ZEP Dyna	BioChem	SupNeut	Soy Gold	D-282	D-232	D-Greeze	Safety Kleene
1	97.8	96.3	90.7	83.9	62.8	45.2	77	NT
2	NT	NT	89.5	NT	72	79.5	NT	NT
3	99.7	96.2	97.8	89.7	99.4	NT	NT	99.9

Summary:

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Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Safety Kleen Corporation	Premium Gold	100	99.90	☑	current cleaner
AG Environmental Products	Soy Gold 1000	100	89.70	☑	
Bio Chem Systems	Solsafe 245	100	96.20	☑	
Magnaflux	Daraclean 282	100	99.40	☑	
Safe CleanUp Solutions	Super Neutral	10	97.80	☑	
ZEP Manufacturing Company	Dyna 143	100	99.70	☑	current cleaner

Conclusion: Having compared the current cleaners to the client's suggested substitutions, it is apparent that there are several choices available. In making the switch, cleaning efficiency will remain the same as is evident from the percent removal of the tested cleaners.