CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 06/02/1998

Experimenters: Jason Marshall

ClientType: State Highway Department

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

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

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Determine if temperature would aid cleaners

Experimental Procedure: The same three oils were used to contaminate the pre-weighed aluminum coupons. 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 130 F. Coupons were then rinsed in tap water for 30 seconds also at room temperature. Parts were air-dried and then weighed one more time.

SUBSTRATE MATERIAL: Al-202-6061 T-4
CONTAMINANTS: Citgo Cutting Oils 425 & 120, Sliderite 220

Results: Table 1 list the cleaning efficiencies of the three aqueous cleaners at the elevated temperatures. The two WR Grace products increased their effectiveness, and the Safe CleanUp product showed no signs of improving.

Table 1 Cleaning Efficiencies

@ 130 deg F	Daraclean	Daraclean	Safe Clean Up
	282	232	SupNeut
Coupon 1	84.3	68.7	92.9
Coupon 2	59.2	86.8	87.7
Coupon 3	72.4	82.9	87.9
Average	72	79.5	89.5
Std Dev	12.6	9.53	2.95

Table 2 compares the cleaning efficiencies of the heated and unheated aqueous cleaners from trials 2 and 3.

Table 2 Comparison of Cleaning Efficiencies

CLEANER	Efficiency @ Room Temp	Efficiency @ 130 deg F
WR Grace Daraclean 282	62.8	72.0
WR Grace Daraclean 232	45.2	79.5
Safe CleanUp Super Neutral	90.7	89.5

The Daraclean 232 had the greatest increase when heated, up almost 35%, followed by the 282, up about 10%, and the Super-Neutral down slightly.

Summary:

Substrates:	Aluminum				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Safe CleanUp Solutions	Super Neutral	10	89.50	☑	
Magnaflux	Daraclean 282	10	72.00	☐	
Magnaflux	Daraclean 232	10	79.50	☐	

Conclusion: Temperature helped to increase the efficiency of two aqueous cleaners. The increased efficiencies were still lower than the third cleaner.