CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 12/13/1999

Experimenters: Jason Marshall, Nicole Vayo

ClientType: Department of Public Works

ProjectNumber: Project #1

Substrates: Aluminum, Brass, Stainless Steel, Steel

PartType: Coupon

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

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate client requested cleaners based on Vendor supplied information.

Experimental Procedure: The cleaners used were diluted to 5% (except one) using DI water in 600 ml beakers. Cleaning of the coupons was performed using stir-bar agitation at 130 F (except one) for five minutes. Coupons were rinsed using tap water at 120 F for two minutes and dried at room temperature for two hours. Gravimetric analysis was used to determine effectiveness.

SUBSTRATE MATERIAL: Table 1 lists the coupons materials used
Table 1. Substrates

Aluminum	202-2024 T-3
	202-7075 T-6
Stainless Steel	202-410 B-85
Brass	202-260
Cold Rolled Steel	202-1020

CONTAMINANTS: Table 2 lists the contaminants and their CAS#s
Table 2. Contaminants Used

Contaminant	CAS #			
oil	64741-89-5	64742-53-6	64741-44-2	
lubricant	64742-57-0	8052-42-4	64742-62-7	64742-47-8
grease	64742-47-8			

CONTAMINATING PROCESS USED: All contaminants were applied to coupons using handheld swabs.

Results: Both Ensovle Grease Feast and United Laboratories United 450 All Clear products were effective in removing all three contaminants tested. Grease Feast efficiency ranged from 88-100% and the United 450 removed 91-100%.
The other United Laboratories product, United 2002, had much lower removal of the contaminants. The oil and grease were under 70% removal and the coupons with the lubricant actually gained weight. This could be signified that the product was acting in different manner than the other products. Instead of dissolving the contaminant into solution, the cleaning product was being absorbed into the lubricant, causing swelling, and may eventually lift the contaminant off the coupon. Table 4 lists the cleaning results obtained for the three cleaning solutions and the three contaminants.

Table 4. Cleaning Results

Company Name	Product Name	Classification	Concentration	Temperature
Ensolve Biosystems	Grease Feast	Alkaline Aqueous	5	130
United Laboratories	United 450 All Clear	Alkaline Aqueous	5	130
United Laboratories	United 2002 Harvest Gold	Solvent	100	72

Summary:

Substrates:	Aluminum, Brass, Stainless Steel, Steel

CLEANING LABORATORY EVALUATION SUMMARY

Contaminants:	Cutting/Tapping Fluids, Greases, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Ensolve Biosystems Inc	Grease Feast Plus	5	94.00	☑	oil
Ensolve Biosystems Inc	Grease Feast Plus	5	100.00	☑	grease
Ensolve Biosystems Inc	Grease Feast Plus	5	88.00	☑	lubricant
United Laboratories International	United 2002 Harvest Gold	100	66.00	☐	oil
United Laboratories International	United 2002 Harvest Gold	100	-12.00	☐	lubricant
United Laboratories International	United 2002 Harvest Gold	100	65.00	☐	grease
United Laboratories International	United 450 All Clear	5	95.00	☑	oil
United Laboratories International	United 450 All Clear	5	91.00	☑	lubricant
United Laboratories International	United 450 All Clear	5	100.00	☑	grease

Conclusion: Two of the three products had excellent removal of all the contaminants. Ensovle Grease Feast and United 450 All Clear removed nearly 90% for the oil, grease and lubricant. Even though the third cleaning product had low efficiencies, the results show that the cleaning mechanism may be different than the two aqueous products and could require slightly longer cleaning times.