CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1997

DateRun: 07/31/1997

Experimenters: Jason Marshall, Prashant Trivedi

ClientType: Machine Construction Company

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Greases, Lubricating/Lapping Oils, Dirt, Metal fines

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Dirt, Grease, Oil and Metal Fines retest

Experimental Procedure: Five chemistries were selected from the previous trial and from the Lab's database. These cleaners were tried initial by placing one drop onto a coupon contaminated with the "gunk." Observations were made to determine which cleaners might work.

Ten coupons were taken from trial six and weighed again to obtain the contaminated weights. The initial weights from trial six were used in this trial as well. The three aqueous cleaners were heated to 150 F, while the other two cleaners (Vortex and D-Greeze) were used at ambient temperatures as recommended by the manufacturers. Two coupons were placed in each cleaner for ten minutes with stir-bar agitation, then rinsed in a tap water bath for two minutes at 120 F. The coupons were then allowed to dry at ambient temperatures for about an hour. After the coupons were dry, the final clean weights were recorded.
SUBSTRATE MATERIAL: Stainless Steel
CONTAMINANTS: Dirt, Grease, Oil and Metal Fines

Results: The results from the drop test showed that all of the cleaners should have some effect on the contaminant when used at full strength. Vortex appeared to be the most effective, followed by D-Greeze 500. It was difficult to tell which of the remaining three cleaners was better. Having determined that all the cleaners could clean the "gunk," the second half of the trial was run using all of the cleaners.

% Contaminant Removed					
	Vortex	D-Greeze	4000T	Release	Shop Master
	100.00	99.10	84.40	11.40	21.50
	100.20	95.90	94.50	7.60	20.30
Average	100.10	97.50	89.45	9.50	20.90
std dev	0.14	2.26	7.14	2.69	0.85

Both Vortex and D-Greeze showed excellent removal of the contaminants. 4000T had good results at full strength while Release and Shop Master had poor cleaning capabilities. Vortex need far less than the ten minutes for complete cleaning. D-Greeze was not as fast as Vortex but yielded similar end results. The coupons in the Release solution were partly cleaned by the stir-bar. The coupons were being struck by the stir-bar during the cleaning period. Shop Master appeared to be the least effective and produced a lot of foam during cleaning.

Summary:

Substrates:	Stainless Steel				
Contaminants:	Greases, Lubricating/Lapping Oils, Dirt, Metal fines				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
EcoLink	Vortex	100	100.10	☑	
Transene Company, Inc.	D Greeze 500 LO	100	97.50	☑	
Buckeye International	Shopmaster	5	20.90	☐	
Oakite Products	Inproclean 4000 T	100	89.45	☑	
Cleaning Systems	Release	100	9.50	☐	

Conclusion: Three of the cleaners proved to have good to excellent cleaning capabilities in the experiment. Ecolink's Vortex (100% cleaning) is a semi-aqueous solvent that works at room temperature. Solvent Kleene's D-Greeze 500 (97.5% cleaning) is a non-aqueous cleaner that also works at room temperature. Oakite's Inproclean 4000T (89.5% cleaning) is a natural terpene based solvent emulsion that works better when heated.

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The final decision of which cleaner to select should be based on what the client thinks is better suited for their situation. MSDSs are attached in order to help in the client's decision.