CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1996

DateRun: 10/09/1996

Experimenters: Jay Jankauskas

ClientType: Manufacturers of Precision Parts and Assemblies

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

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

Cleaning Methods:

Analytical Methods: Gravimetric

Purpose: Evaluate cleaning efficiency of aqueous cleaners

Experimental Procedure:

Results:

Here is a general description of the testing that I am looking to accomplish here in the Surface Cleaning Lab for you. I plan to divide the testing up into two different phases. The first phase will test out the cleaning efficiency of several different aqueous cleaners. For this experiment, all external variables will be kept constant (time, agitation, concentration and temperature). The three oils that I have from you (C-Eblis cutting oil, Castrol Ilocut-5721 and Texaco Cleartex D) will be applied onto metal coupons and cleaned in a beaker with minimal agitation. Cleanliness will be determined by gravimetric methods (weighing coupons before and after contamination and after cleaning) to obtain a percentage of oil removed.

All cleaning chemicals will also be tested for corrosion of metal. Copper, brass and aluminum coupons will be immersed in a heated solution of each chemistry for 24 hours. A percent weight loss and any visual ethching or pitting will be noted. The chemistries that I have selected for this trial are:

Company Name-Product Tradename--pH (concentrate)
Calgon Corporation-AK-6215--13.3
Ardrox Incorporated-Ardrox 6333--12
Buckeye International, Inc-Buckeye Shopmaster--12.3
Oakite Products, Inc.-Inpro Clean 2000--11.4
Brulin Corporation-815 DG Process Detergent--12
WR Grace & Co.-Conn-Daraclean 235--8
Petroferm Inc,-Bioact 50 Aqueous Cleaner--7.5
U.S. Polychemical-7000P and Polyspray 790--8.4 & 11

Results from both the cleaning efficiency and the corrosion tests will be used to determine if that chemistry will be tested further (the two or three best performers will be used).

The second phase will involve optimizing time, temperature, concentration and agitation type to obtain the maximum cleaning efficiency. The types of agitation I plan to look at are; airsparging, spray under immersion and ultrasonics. Judging from types of parts you supplied and the number that you produce, whatever agitation type is successful will need to be coupled with some type of tumbling to be effective in cleaning a large batch of parts. For the second phase of the tests, I'll use the contaminated parts that you supplied to us. Cleanliness will be evaluated by performing a solvent extraction and analyzing the extracted solution with FTIR. The cleanliness level samples cleaned in phase II will be compared to the vapor degreased samples that you supplied to us.

Summary:

Substrates:	Stainless Steel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Calgon Corporation	AK 6215		0.00	☑	
Ardrox Inc	6333		0.00	☑	
Buckeye International	Shopmaster		0.00	☐	
Oakite Products	Inproclean 2000		0.00	☐	
Brulin Corporation	Formula 815 GD		0.00	☑	
Magnaflux	Daraclean 235		0.00	☐	
Petroferm Inc	Bioact 50 (no longer available)		0.00	☐	
US Polychem Corporation	Polyspray Jet 790 XS		0.00	☐	
US Polychem Corporation	Polychem A 2000 P		0.00	☐	

Conclusion:

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As I stated in our phone conversation today, this test plan is not set in stone. If there is something missing in this testing plan or there are any additional chemistries you would like me to test, just let me know.